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USE OF NATIVE CRAFT  
MATERIALS

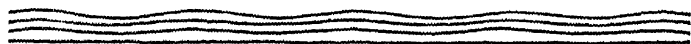




PLATE I. A pottery vase on a wheat-straw mat.



# USE OF NATIVE CRAFT MATERIALS



*By* MARGARET EBERHARDT SHANKLIN

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## PHOTOGRAPHS

The photographs listed below were taken by B. W. Shanklin, R. R. Russell, and Burch Brown.

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## INTRODUCTION

As a teacher or group leader begins to see beauty and sources of handcraft materials in the countryside, so will the learner also search, experiment, and create objects of beauty and utility. Much of the information presented is based upon original experiments and observations. In writing the handbook, care has been taken to make the steps in gathering, preparing, and working of the materials plain and in giving adequate illustrations to aid the worker in handcrafts.

Each chapter contains information concerning the gathering, preparing, and use of the material as well as suggested adaptations. No patterns as such are given. The methods described are adapted to other materials which may be at hand in different localities of the country. The problems range from simple articles for younger craftsmen to the more advanced work of adolescents and adults. The articles made are the result of putting to artistic and useful purposes what would otherwise be wasted products.

There remains a vast field of research in native handcraft materials. The "theme" through the history of the crafts has been painstaking and artistic workmanship. The "variations" have come about through the use of the materials indigenous to the area in which each craftsman has worked.





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# CHAPTER ONE: STRAW

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WHEAT as well as rye and oat straw is an excellent material for weaving. The naturally shiny surface and soft yellow color enhance the beauty of the material. Straw used as the weft for table place mats, woven on a table- or floor-type loom, or even on a simple cardboard loom, is a new and cost-free material.

## GATHERING THE STRAW

The stalks should be gathered just at harvest time. If it is too late in the season, long stems may be selected from the strawstack. Cut with scissors or a knife near the ground. Lay the straw in a dry and shady place for a few days.

## PREPARATIONS FOR WEAVING

Figure 1 shows how to prepare the straw for weaving. First, remove the head of the grain with scissors. Then cut above and below the joints and slip off the grassy leaves.

To make a weaver long enough, join several lengths of straw by slipping one piece into the end of another until the desired length is made. See Figure 2. Unfortunately,

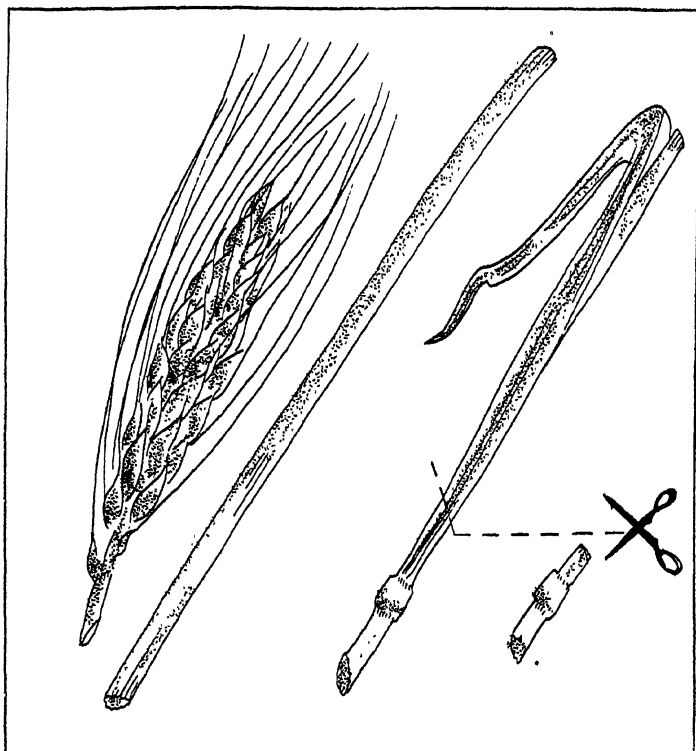


Figure 1. Remove the head of the grain with scissors. Cut above and below the joints and slip off the leaves.

each succeeding section of straw does not telescope into the other, so it is necessary to select straws until they fit. For table mats the weavers should be approximately 15 inches long. This length allows for trimming the edges of the mat after it is completed. Prepare a quantity of weavers before starting to weave. If they are to be used immediately, soak them in warm water.

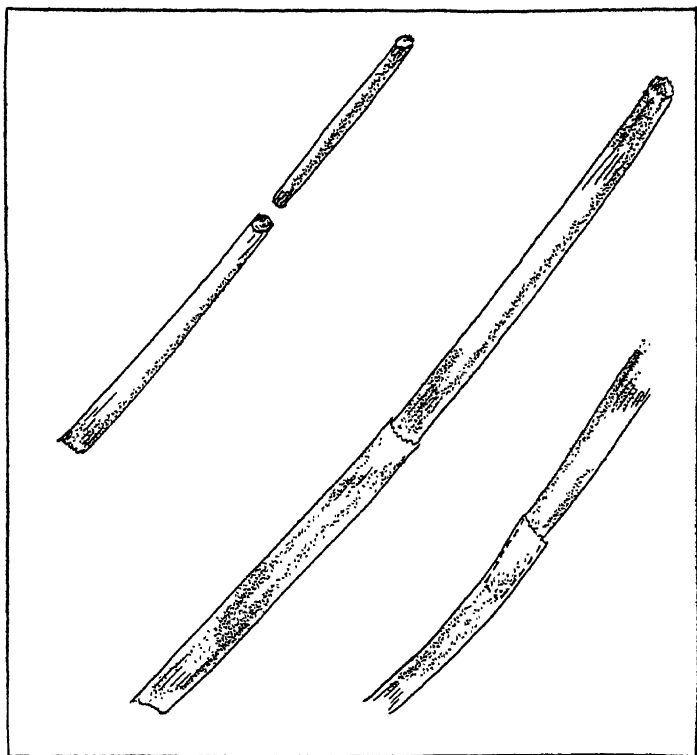


Figure 2. Slip one straw into the end of another.

## WEAVING A MAT ON A CARDBOARD LOOM

### *The Loom*

A simple cardboard loom can be used if a table or floor loom is not available. The cardboard should be strong and flexible. Cardboard from the backs of tablets and suit boxes is suitable for small mats. A heavier weight cardboard should be used for the larger mats. Arch the card-



PLATE II. Threading a cardboard loom.



PLATE III. Weaving a straw mat on a cardboard loom.

board one way and then the other to find which is the more flexible. This should be used as the length of the mat so that the cardboard will not break as the straws draw the threads tighter on the loom.

A card 14 x 22 inches is large enough for a table place mat. The finished mat will be about 14 x 18 inches.

Cotton twine, coarse crochet thread, or carpet warp may be used for the warp. Use a double strand of thread. Tie a knot in the end of the thread and slip the strands into the first notch of the cardboard. Notches cut  $\frac{1}{4}$  inch deep and  $\frac{1}{2}$  inch apart are an average size for weaving.

Bring the string down to the opposite notch, slip the threads into that notch and bring the warp to the front of the loom through the adjoining notch. See Plate II. Continue until the loom is threaded. All of the warp threads are on the front of the cardboard. There must be an uneven number of threads for weaving. Tie the last warp end at the back of the cardboard by bringing it diagonally across to the beginning thread. These threads are untied when the mat is finished and the ends tied in the fringe.

### *Weaving Processes*

Soak the straw in water overnight to make it flexible.

Weave the first straw across the loom, under and over the warp threads. See Plate III. The next weaver is placed over and under the opposite threads. A simple pattern may be woven by skipping warp threads, by cutting groups of notches closer together, or combining with other native materials such as cattail leaves, strips of corn-husks, or slough grass. Push the straw together each time a new one is added and keep the warp threads parallel.

The cardboard will arch or bend as the thickness of the weft is added. Then the fingers can be placed on every other thread to make a partial shed for the straw. This act saves time and patience.

Plate IV shows how the straws are cut even. The ends should extend about an inch beyond the outside warp threads. The width of a ruler makes a handy device for measuring this.

When the warp is filled and the ends cut, add several rows of cotton thread by weaving under and over each

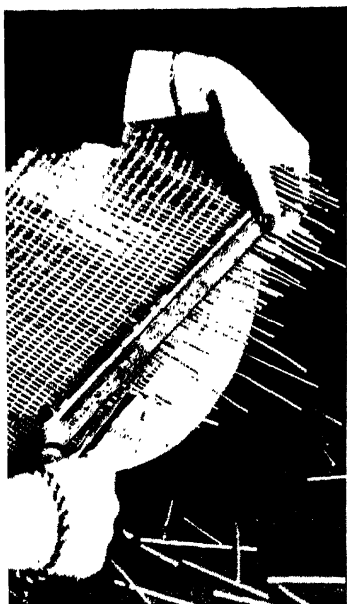


PLATE IV. Cutting the ends of the straws.

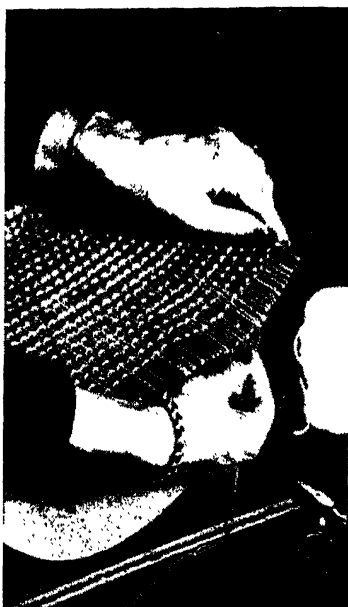


PLATE V. Additional thread is woven under and over the extending weft ends.

extending straw of the weft to give additional firmness and color. See Plate V. A double strand of thread 6 inches longer than the mat should be used. Do not tie the ends until the mat has been removed from the loom and additional straws have been added to make it firm. Several colors of thread serve for added decoration.

To remove the mat from the cardboard, Plate VI, slip the warp over the ends of the notches. Fill the loose warp ends with additional straws until the mat is firm. Tie the ends of the beginning and last warp threads to the adjoining threads or tie them in with a fringe if it is being added. The ends of the warp will appear "Y" shaped after



the mat is removed from the loom. This may be remedied if the threads are clipped and tied parallel after removing the piece from the cardboard. Tassels or fringe in colors which harmonize with the native material may be added by tying the threads to the beginning and end straws of the mat.

### WEAVING A STRAW MAT ON A TABLE OR FLOOR LOOM

If a table or floor loom is available, set up a simple pattern with colored cotton warp. Allow 22 inches of warp for each mat, to include the border and a tied fringe.

Select a simple border pattern from a weaving instruction book. Weave a 1-inch border, using the cotton thread for the woof or weft. Then insert the straw weavers in the shed. Close the shed and beat. Continue to lay the weavers in the shed and beat. The straws should extend on each side beyond the width of the mat. Weave a 1-inch border at the other end of the mat and remove the mat from the loom. Allow enough warp for tying a fringe. Cut the extending



PLATE VI. To remove the mat from the loom, arch the cardboard and slip the warp over the ends of the notches. Note the position of the hands.



PLATE VII. A table setting with a wheat-straw mat.

straws an inch beyond the outer warp threads. Tie the end threads for a fringe.

For firmness and variety in color and texture, cotton thread may be used alternately with the straws. Stripes and patterns make attractive contrasts to the bright, shining straw.

#### CLEANING A STRAW MAT

The finished mat is neither varnished, shellacked, nor

waxed. The straw has a natural luster of its own. The mats may be cleaned by dipping them into warm soap-suds and rinsing them in cool water. Soiled spots may be sponged off with a damp cloth. The mats should be dried flat and out of the sunshine.

Straw mats are attractive as table coverings and good as hot-dish pads. The straw color and texture are especially suitable for modern table settings in pottery, wood, and glass. See Plate VII.

### STRAW BRAIDS

The making of straw hats and bonnets was, until this century, a purely domestic affair. The straw was grown, prepared, braided, and sewed together by members of the same family. In New Hampshire, the wide hats used in the hayfields were made of rye straw. This craft of hat weaving provided many a farmer's daughter with spending money.

Mrs. Betsey Metcalf Baker is said to have been the first American manufacturer of straw hats. She started at the age of twelve, after admiring an imported bonnet in a shopwindow. She taught many of her friends the art.

Braiding straw became so popular that it was carried into the schoolroom, into church meetings—and the sewing circles became braiding bees! The ladies carried their little straw bundles with them almost everywhere they went and straw plaiting became the handwork of the day. In fact, it became such a fad that one reformer, in 1825, published a tract, "Essay on the Manufacture of Straw Bonnets," in which he warned of the evils that straw hats would bring. Some maintained that famine

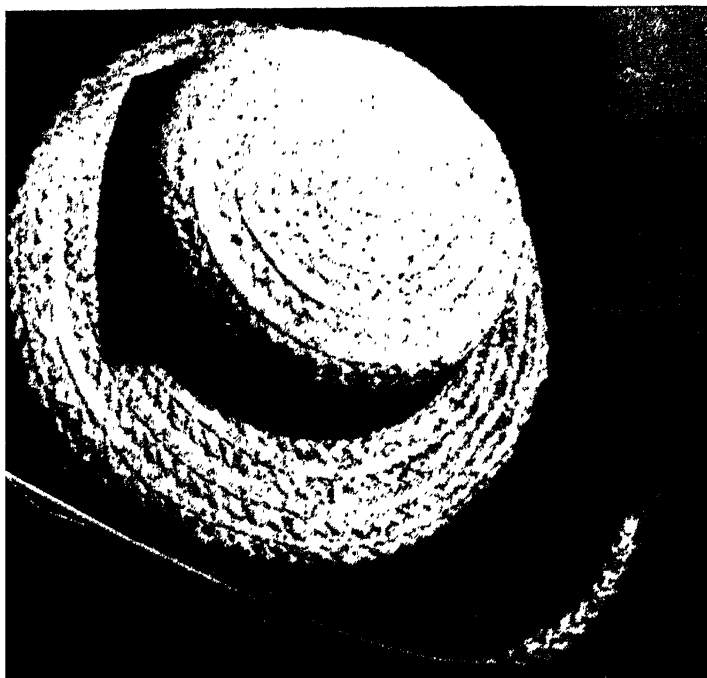


PLATE VIII. A straw hat made of two types of straw braid.

would overtake the land as the result of women cutting the grain before it had ripened!

A most interesting discovery has been made of a Kansas craftswoman who still braids wheat straw and makes hats and baskets. She gathers the wheat at harvesttime and removes the heads of the wheat, the joints, and the leaves, as just described in the preparations for weaving straw mats. When she is ready to braid the straw, she soaks the straws in warm water. She presses the braid flat by running it through a hand clothes wringer. See Plate VIII for an example of her braiding.

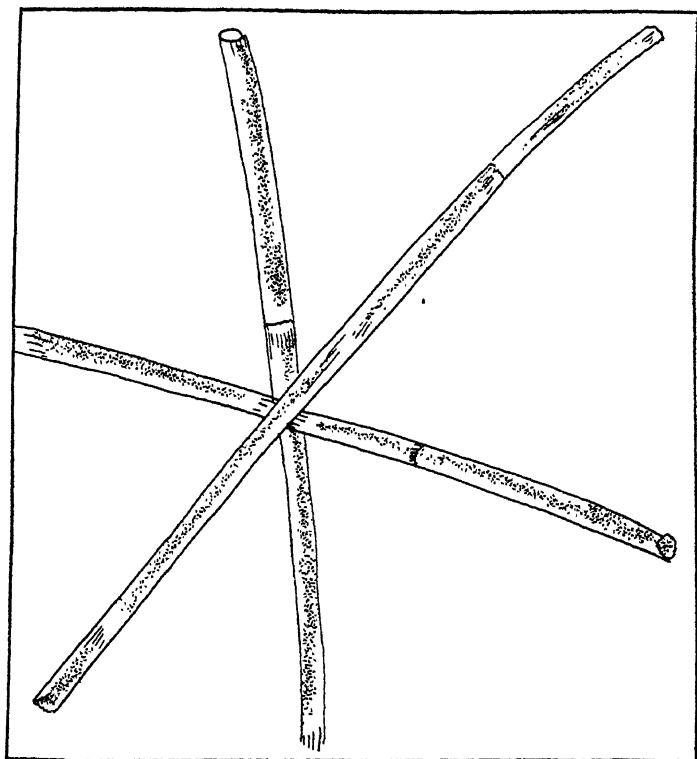


Figure 3. Crisscross three straws, making a star pattern.

Her hats are like farm hats. This one was remade to suit the fashion. See Figures 3 and 4 for detailed drawings of the method of braiding straws.

To make the flat braid, strip the straw and soak it. Crisscross three straws, making a star pattern. Add a seventh straw. Start braiding by taking the extreme right straw and folding it. Braid it under one straw and over two to the center. Take the extreme left straw and fold

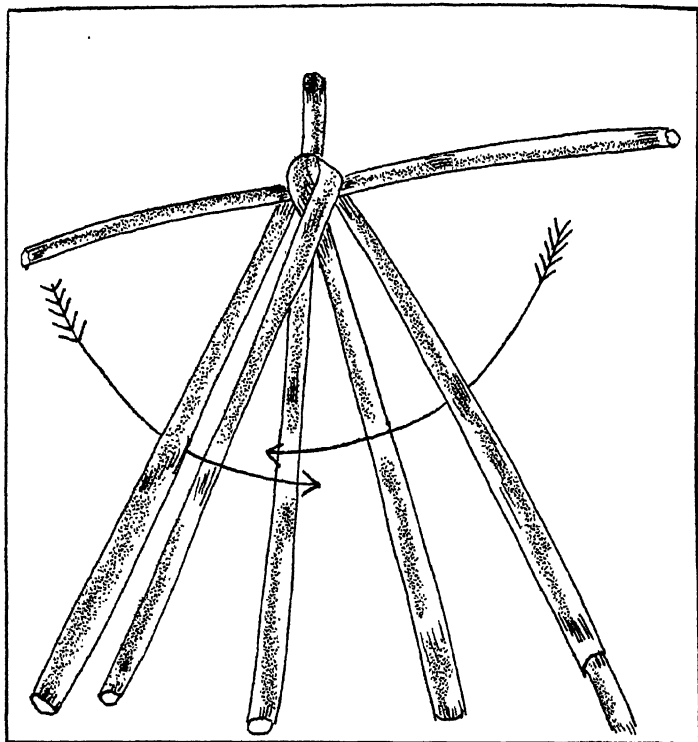


Figure 4. Braid under one and over two to the center.

it over. Braid it under one and over two. Continue to braid. Additional length is made by inserting another straw in the end of the short straw. Keep the braid wet while working on it.

Place mats, hats, purses, small baskets, and napkin rings are a few of the articles that can be made of braided straw. Other braids with different numbers of straws may be made.

## STRAW FIGURES

Swedish craftsmen use straw in table decorations. Tiny straw men and women, animals, and insects emerge from clever fingers.

Plate IX shows a straw cowboy made of wheat straw and thread, with wire for the lasso. First, the straw was stripped and soaked overnight. Ten straws, each 6 inches in length, were wrapped and tied  $\frac{1}{2}$  inch



PLATE IX. A straw cowboy.

from one end with cotton crochet thread. This formed the top of the head. The straws were wrapped  $\frac{1}{2}$  inch below the first binding to form the head and neck. The straws for the body and legs were separated and five  $\frac{1}{4}$ -inch straws were placed crosswise between the main straws. These were for the arms. The wrists were tied and the straws cut to represent the fingers. A band was wrapped around the body for the waist. Near the hips, two heads of grain were tied on to represent the chaps. The divided straws and chaps were tied at the ankles.

The details for making the brim of the cowboy hat are shown in Figure 5. Tie a double strand of thread to the first band of thread. Then place a 2-inch straw between the threads and tie it firmly in place in the middle. Tie another short piece of straw and so on until enough have been added to make a complete hat brim. Bend the straws

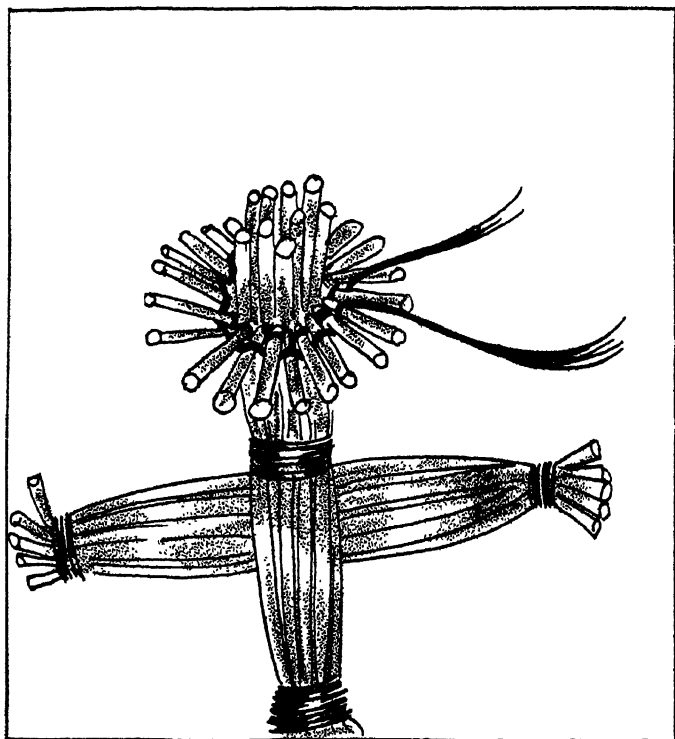


Figure 5. Details for the hat.

in half like the spokes of a wheel. Weave over and under the straws with the two threads until the brim holds its shape. Clip the straw ends to make the brim round.

Other figures may be made in much the same manner. Colored scraps of yarn may be used instead of cotton thread, and felt from discarded hats adds decorative touches. These objects make unusual party favors and are attractive lapel ornaments for suits and sweaters.



## CHAPTER TWO: CORN

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**A** MOST adaptable native material is the corn plant. The stalk, cob, husks, and grain can all be used to construct practical and artistic articles. The Southern Highlands people are perhaps the most famous for their use of corn. Besides using it as a food, parts of the plant are used for mattress fillers, chair and stool bottoms, door and hot mats, twisted ropes for bed cords, horse and mule collars, and hats for women and girls.

### PREPARATION OF THE CORNHUSKS

Cornhusks may be gathered green or dried. Remove the coarse outer husks and use the soft-textured ones. If the husks are green, dry them indoors to retain a soft green color. Sun-bleached husks are useful in patterns.

To dye the material, a commercial all-purpose or a rayon dye should be prepared in the usual way. Add the husks, a few at a time, and boil them for five minutes. See Plate X. Remove the husks from the bath with sticks or a long-handled fork. Drain the excess dye onto several thicknesses of newspaper and rinse the husks in cold water. Dry in the shade. The dyed cornhusks should be kept in a dry place. Dampen immediately before using.



PLATE X. Remove the husks from the dye bath with sticks.

### BRAIDING CORNHUSKS

For braiding, tear the husks into narrow strips. Dampen them by dipping the strips into a pan of water for a few minutes. Tie three or more strips together and hook them over a nail or pin them to a board to hold them firmly at the knot. Keep the strips flat and fold them over carefully to make a flat braid. For a round braid, the strands are twisted as they are plaited. Wider strips make heavier braids. Whole husks may be braided.

Since the strips are relatively short, it is necessary to overlap the ends to add new pieces for length. Care



PLATE XI. Add a new strip of cornhusk to the right-hand strand.

should be taken to add length to only one strand at a time so that the braid will not become bulky.

See Plate XI for adding a new piece of cornhusk.

1. Braid 2 inches.
2. Add a new strip of cornhusk to the right-hand strand by overlapping the ends 2 inches.
3. Continue to braid until the spliced strand is securely

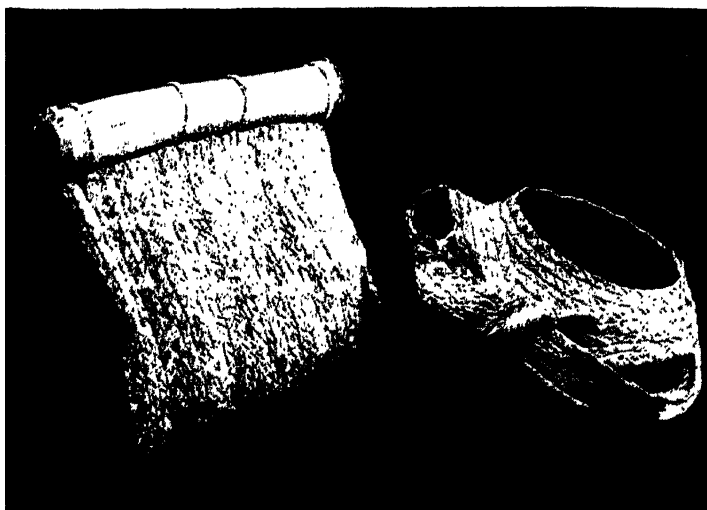


PLATE XII. A hat and bag made of braided cornhusks.

fastened in the braid. The extending ends are trimmed after the braid is completed.

To stitch the braids, use a medium-sized needle and either a contrasting or a blending color of sewing thread. Dampen the braid. Fold the knotted end of the braid under after clipping the extending ends. Form the center of the spiral and stitch securely. Continue to stitch the edges of the braid together, keeping the mat flat. If the edges of the mat are to be shaped for a basket, turn the braid up and stitch into place. Ease the last row over the preceding row to make a level top. Otherwise, the spiral method of construction will make an uneven basket. Contrasting colors of braid may be used for decorative effects in the mats. Cornhusks need not be shellacked to preserve them.

The hat and bag pictured in Plate XII were made of

braided cornhusks in their natural color. The damp flat braids were sewed together by hand with a neutral shade of thread. The pin on the bow of the hat is the butt end of a corn cob. A long corsage pin was forced into the pithy section and cemented in place. The handle of the bag is a segment of cornstalk. Double strands of braid hold it in place. A zipper is the top fastening for the bag.

### WEAVING ON A CIRCULAR LOOM

A simple circular cardboard loom strung up with cotton thread and woven with narrow strips of cornhusks make substantial hot-dish pads. These mats should not be used where water will be absorbed by the cardboard.

Cut out a circular piece of medium-weight cardboard. See Figure 6. A tablet back is a good weight. Estimate the spacing so that there will be an uneven number of notches about  $\frac{1}{2}$  inch apart and  $\frac{1}{4}$  inch deep. Punch a hole through the center of the cardboard with a nail or a darning needle. Tie a large knot in the end of a long strand of twine, carpet warp, or crochet thread. Slip the thread into a notch, bring the thread over to the front of the cardboard, down through the hole in the center, across the back of the loom, into the next notch, through the center hole, and continue until the loom is threaded. A darning needle, loop of wire, or a hairpin may be used to help with the threading of the loom.

Thread a needle with a narrow strip of dampened cornhusk. Starting from the center, weave under and over the warp threads, making certain that each succeeding row is over opposite threads. When adding another strip, slip the ends under the warp and weave the new strip over

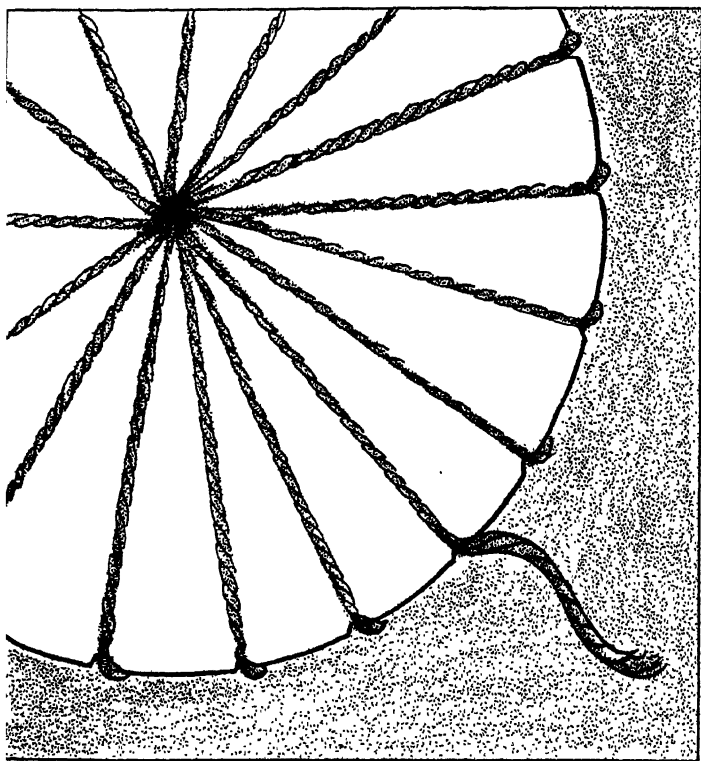


Figure 6. A circular cardboard loom.

and under the last three threads. Fill both sides of the cardboard. Pack the cornhusks together.

Clip the extending ends of the cardboard and fill in the loose edges. The cardboard is left inside the mat for added stiffness and thickness. The edge may be bound with a wide flat braid of cornhusks stitched around the mat. Another border decoration especially suited to very young children is shown in Plate XIII.

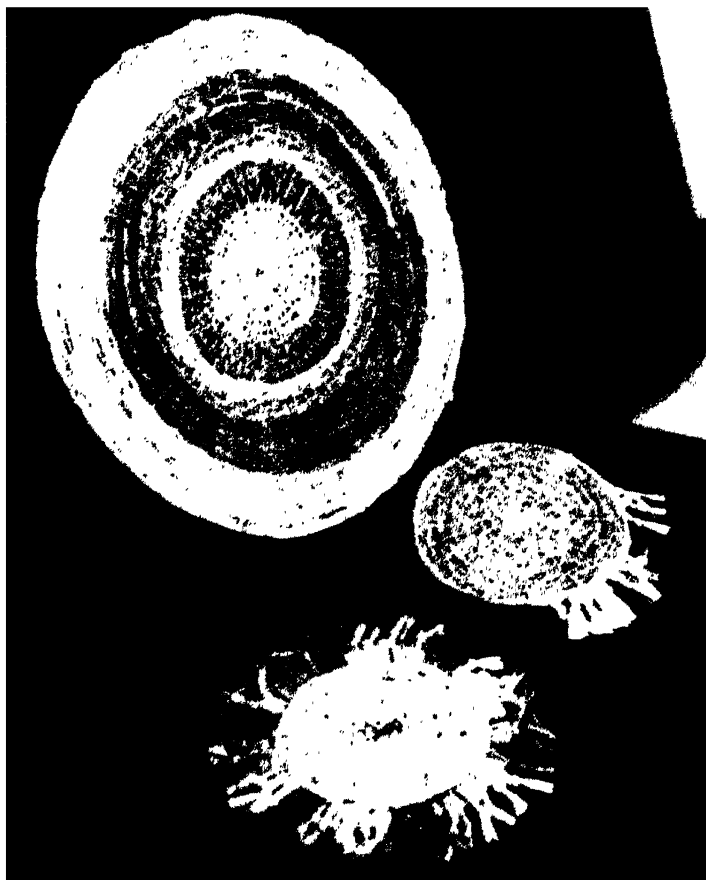


PLATE XIII. The fringe is tied in place and trimmed.

### CORNHUSK COSTUME FLOWERS

Costume flowers made of the natural or dyed husks have a nice texture for use with wool or heavy rayon suits and dresses. Cut a simple pattern for a petal form and lay it lengthwise on the husk. Cut around with scissors.



LATE XIV. A cornhusk costume flower.

Centers are made by gathering the husks together; tearing, twisting, and tying knots in the ends of narrow strips of the cornhusks; by using the butt end of the corncob; and by a single knot of the husk.

Bind the parts together with strong thread. Add leaves and buds as desired. To make a neat covering over the tied portion, glue additional petals or strips onto

the flower stem with rubber cement such as one finds in a tire-repair kit or at a stationery store. The flower is held in place with a corsage pin, or a safety pin is sewed onto the stem. Soft neutral shades are the most attractive.

The cornhusk costume flower shown on a coat in Plate XIV was made by an eight-year-old child. The petals were made by tearing the dyed strips of cornhusks about 1 inch wide. Then the strips were formed into loops by bringing the ends together and overlapping them about an inch. The ends were held in place by tying them together with string. Five or six petals may be tied around a center and the end of the stem which is formed by the center wrapped and glued.

### CORNHUSK DOLLS

The quaint little cornhusks dolls in Plate XV were made by grade-school children. The natural colored husks





PLATE XV. Cornhusk dolls.

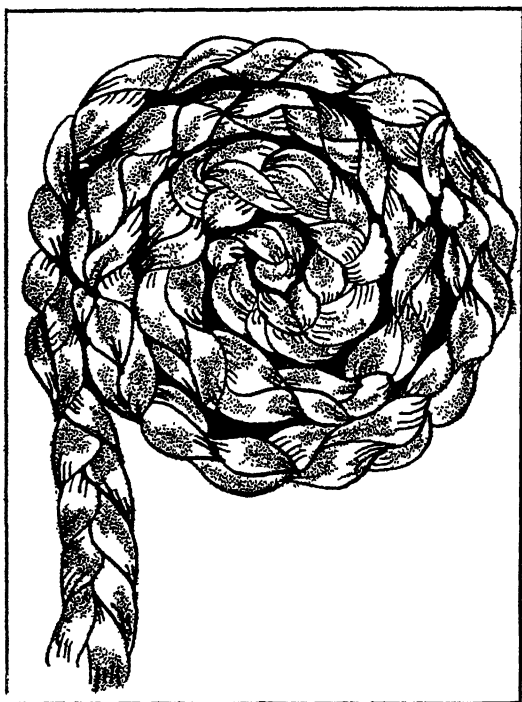


Figure 7A. Braided style mat, round spiral center.

are dampened and several are folded together to form the head. Tie at the neck with cotton twine. Add folded husks at right angles to the neck for the arms. The body is formed by the ends which extend from the neck. Clothes fashioned of colored husks may be made to the craftsman's own design. The dried corn silks are glued in place for the hair. The features of the face are painted with water colors or drawn with pen and ink. Cornhusk dolls are clever party favors. Cornhusk nativity scenes or

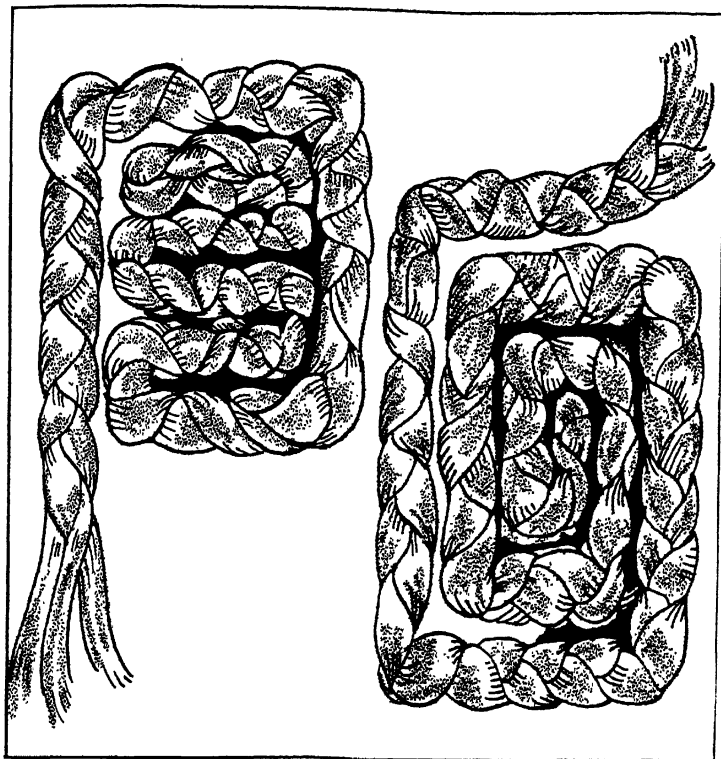


Figure 7B. Braided style, zigzag and square center.

other diorama figures and costume dolls of foreign lands offer opportunities for expression.

### HEAVY BRAIDED MATS

Heavy braided cornhusk mats a foot square may be stitched together for doormats and recreation-room rugs. The individual squares make fine mats for table coverings under vases and statues.

Use the whole husk. Trim the thickened ends. Dampen the husks and braid a heavy round braid. The French Indo-China braided-grass squares sold in department stores show several ways of starting the centers. See Figure 7. If a round spiral coil is used, as the mat increases in size the straight sides are eased into shape. Or the mat may be made with a zigzag or square center.

For a rug, the individual squares are easier to handle than a large single piece. Several persons can be working on the different pieces. The squares can be stored away more easily between working periods.

#### HOW TO MAKE AN ORIENTAL-RUG KNOT LOOM

A shaggy type of rug is made by tying the husks on an oriental-rug knot loom. The loom can be made quite easily. A piece of plywood or the side of a box 6 inches wide and 18 inches long is the base. A short upright piece, 4 inches high, is fastened 6 inches from one end of the board. Two long nails are driven, one at each corner of the short end of the base. A long nail is driven in the middle of the long end of the board. A screw eye is placed at each end of the upright board.

Place a ball of heavy cotton thread on each of the two nails at the short end of the base. Draw the thread forward through the screw eyes, and around the single nail. Tie the ends together. Loop the threads two or three times around the screw eyes to hold the warp taut.

#### WEAVING ON AN ORIENTAL-RUG KNOT LOOM

Dampen the cornhusks. Tear to the desired width. Whole widths of the husks may be used. Make the knot

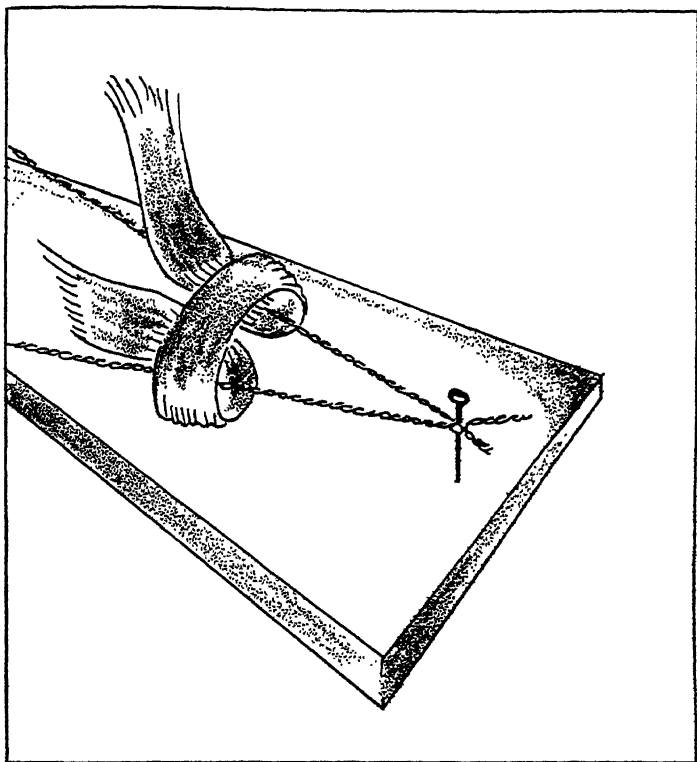


Figure 8. Oriental-rug knot loom.

as shown in Figure 8. Lay the cornhusk over the two warp threads. Pull the ends tight and push the knot toward the end nail. Continue knotting until the warp is filled. Release more warp thread and slip the knotted section over the nail. Continue tying the knots until the desired length is made. Trim the ends of the husks and sew the strip onto a piece of burlap, leaving enough space between the rows so that the rug will be flat.

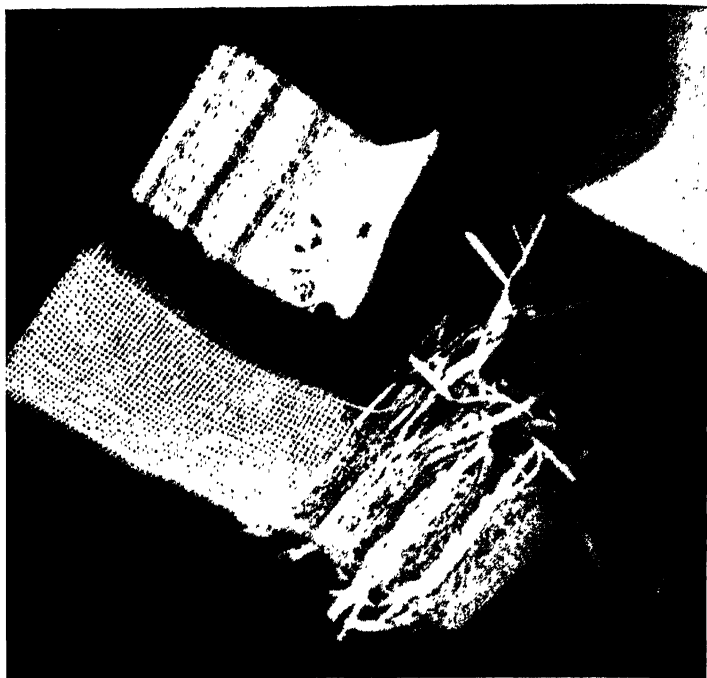


PLATE XVI. Cornhusk needlepoint.

### CORNHUSK "NEEDLEPOINT"

The young sampler makers of our American colonial days learned to stitch with regularity and beauty. An adaptation of cross-stitch work is cornhusk "needlepoint" embroidery. Children of seven or eight years can make simple designs of great beauty. Plate XVI shows a coin purse made in this way.

A cross-stitch or needlepoint canvas or burlap may be used for the foundation. The design should be worked out on squared paper or on tablet paper. Vertical, diagonal, or cross-stitches may be combined. Coin purses, large

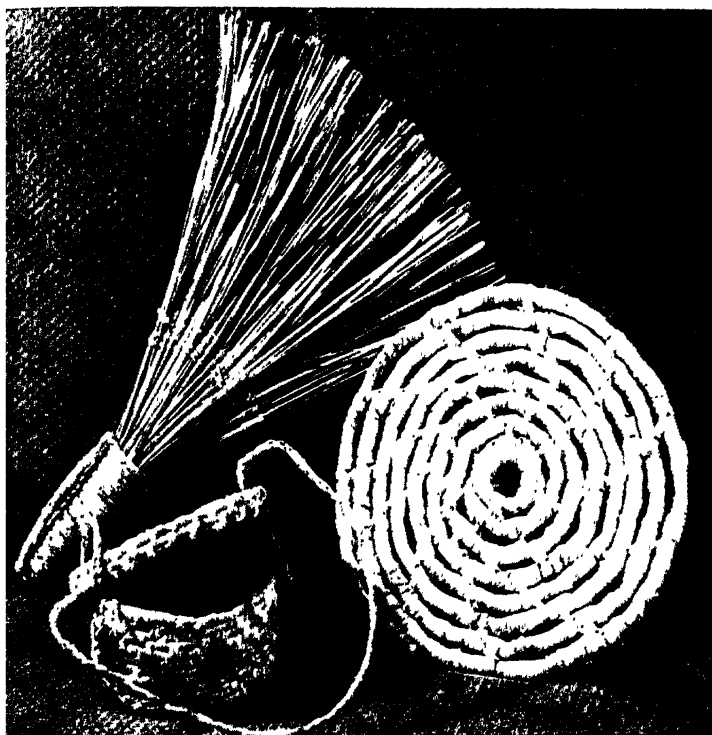


PLATE XVII. Slough grass and cornhusks are combined for baskets.

pocketbooks, book jackets, and other articles may be made.

Cut the foundation material an inch larger than the size of the finished piece. Thread a narrow dampened strip of the natural or dyed cornhusk into a tapestry needle. A darning needle will do. Starting from the bottom of the chart, make a stitch for each crayon stroke on the pattern, working from right to left until the first row is made. Continue until the piece is finished. Stitch the

piece together, trim off the excess canvas, and line the article.

Many other useful articles may be made from the corn plant. The grain has been strung for necklaces. The cobs cut into sections have a pattern that is interesting when used as a stamp in printing gift-wrapping papers. The plentiful supply of cornhusks should be a challenge to handcraft workers to devise other uses for the native material.



# CHAPTER THREE: GRASS

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THE tall grass known as slough grass, swamp grass, or sedge grass can be used for weaving place mats, for making baskets, or as a dye source. It is like the grass used in the British Isles for thatching roofs and here for the grass houses of the American Indians. There are many types of grasses suitable for handicrafts, but the tall slough grass is a superior material because of these qualities: the length of the fibers, the toughness, the flexibility, and the hard, reedlike sections of the stems.

## GATHERING THE GRASS

The grass may be gathered any time during the summer or fall. Even midwinter is not too late to gather the weaving material, but it is often quite brittle at this time.

The gatherers should wear gloves and long sleeves for protection from the razor-sharp blades. Cut with scissors near the ground. Spread the grass out in a shaded place for several days to dry. This native material does not require soaking unless greater flexibility is desired.

## PREPARING THE GRASS

The wiry tips are usually too thin and brittle to use.

Remove the tips. The long grassy section is flexible and is an excellent weaving material. Cut this section into long lengths. By peeling off the outer covering, a hard reed stem is found. The material peeled off is like bamboo when split lengthwise with the thumbnail. Separate the different sections of the grass. Tie them into bundles and store until they are to be used.

### WEAVING A GRASS MAT

To weave place mats of the flexible grassy section, cut the lengths an inch longer than the desired width of the mat. String up a cardboard loom and weave as for a wheat-straw mat. The grass may need pressing when the place mat is finished. Dampen it and place it under a weight. A drawing board or a breadboard laid on top of the mat and weighted down with books makes a satisfactory press.

For a heavy mat, use the reed section of the grass. The light yellow color and smooth texture are beautiful. The split sections of the outer covering for the grass make lightweight mats. Cattail leaves, cornhusk strips, and straw weavers may be used with the grass for variations in pattern and texture. These materials do not need to be waxed, varnished, or shellacked. They may be dyed in a hot commercial dye bath to which salt has been added.

### BASKETRY

Basketry was a handcraft of early America. Baskets for carrying grain were made by the farm craftsmen from the native materials at hand. Expensive reeds and raffia were not used.

Baskets are still being made of native materials by

craftsmen in the southern states. In Allen Eaton's book "Handicrafts of the Southern Highlands," is pictured a breadbasket made of grass coils, from Virginia, and a sedge grass and raffia basket made at Tallulah Falls Industrial Schools in Georgia. One afternoon the author visited the school and saw the young students coming in from a field trip with various grasses for their baskets.

It seems that everywhere baskets are made the coiled type is a favorite with the craftsmen. The different native materials furnish the variations in texture and form. Fundamentally, the stitch is what is commonly called the Lazy Squaw stitch, whether Indian, Chinese, Eskimo, or Mexican.

Native slough grass is an excellent core for this type of basket. The split sections of the common rush or strips of cornhusks make ideal raffia substitutes. Gather the slough grass and dry it as for the woven mats. Soak the grass overnight to make it more flexible. Between working periods, the basket should be dried to prevent molding. Dampen the piece before resuming work.

If cornhusks are to be used for the wrapping material, they should be torn into strips and dampened. These may be dyed. Common rush, found in marshy places near the cattails, should be cut and dried. Soak them in water before using them. They may be split to the desired width and the pith scraped out with a table knife or flattened and used whole.

The flat mat and round basket with a lid, Plate XVII, page 41, were made of slough grass wrapped with cornhusks. The whiskbroom also was made of these materials. Cornhusks bind the strands above the handle.

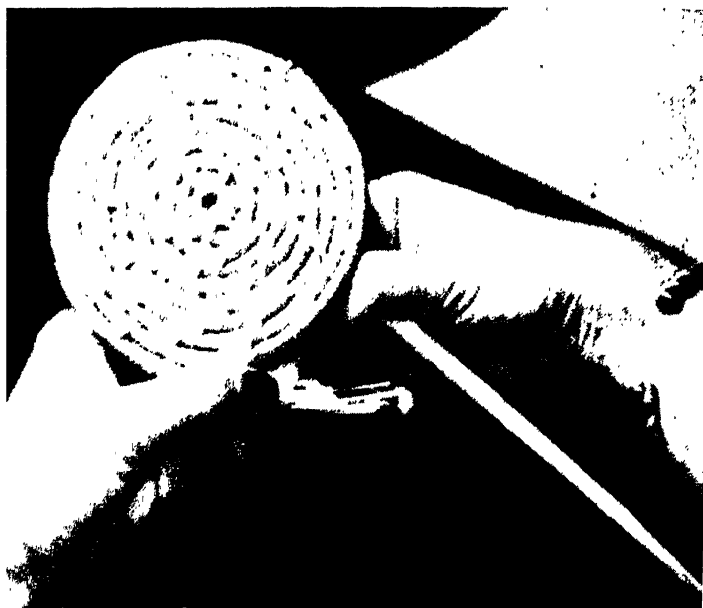


PLATE XVIII. Overlap the ends and hold them in place with the thumb.

### MAKING A SPIRAL COIL MAT OR BASKET

Take a bundle of the grassy section of the slough grass, about the size of the little finger, and start wrapping the end with the cornhusk strips or rush. Lay the husk near the end of the grass and wrap over the grass as well as the end of the cornhusk. For maximum flexibility, hold the piece under water.

Press the wrapped portion into a coil and thread a darning needle with the end of the cornhusk strip. Then stitch around the first coil; bring the cornhusk strip around the outside of the grass coil and wrap it three or four times; stitch around the adjoining coil; wrap the grass

coil again, and continue until it is necessary to splice the wrapping material.

In Plate XVIII is shown how the new piece of rush or cornhusk is added. Overlap the ends of the material about 2 inches. Hold them in place with the thumb, wrap over the short end two times to make it firm, and continue as before. Clip the extending ends later.

To add more length to the grass coil, add a few pieces of grass at a time by sticking them into the end of the bundle. Keep the coil even. The end of the coil of a completed basket or mat is tapered off by trimming the grass until it makes a smooth, wedge shape.

To give the basket form, lay one coil upon the other for vertical sides, or at a half step for a curved or an oblique shape.

## CHAPTER FOUR: RUSH

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THE cattails and common rushes that grow in marshy places are also fine weaving, braiding, and basketry materials. The long flat cattail leaves retain a soft green color if gathered early in the summer and allowed to dry indoors. The rush resembles giant winter onion tops. It bleaches and can be dyed if color is desired.

### GATHERING CATTAILS AND RUSHES

These materials must be gathered before the end of the summer, or they will grow brittle and brown. Both can be cut with scissors or a knife. They should be cut near the ground. Spread them out to dry in a shaded place for several days. Turn them over from time to time. Clip the tips.

### WEAVING A MAT

The length of cattail leaves makes splicing unnecessary. Wider mats can be woven. There is little shrinkage after the initial drying. Cut the leaves to the desired length and soak them in water a short time. For weaving place mats, follow the same directions as for weaving straw or slough grass. The cattail mat in Plate XIX was woven on

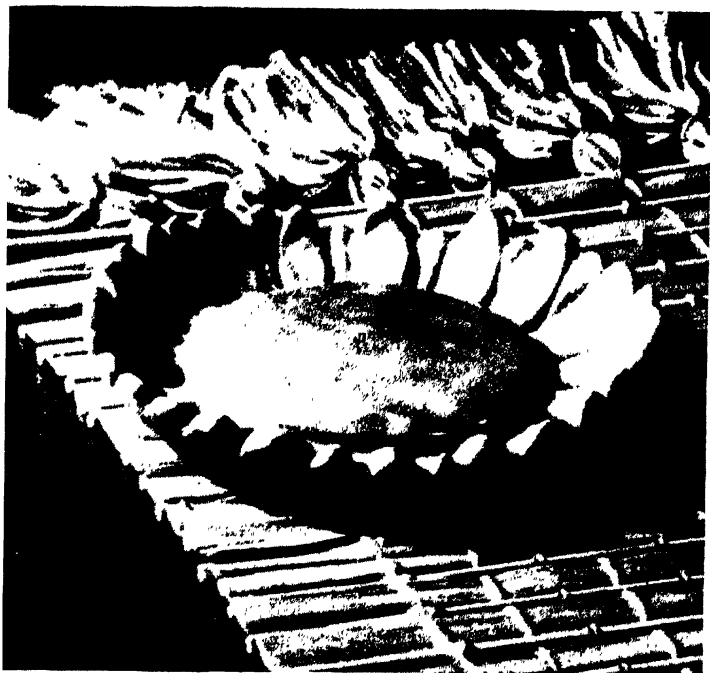


PLATE XIX. A cattail mat.

a cardboard loom. The carpet warp was a soft yellow and a rust brown. Unusual effects may be obtained by combining the cattails with wheat straw, rushes, or slough grass. Also see Plates XXXVIII and XXXIX.

#### HOW TO MAKE A BASKET OF CATTAIL LEAVES

A basket woven of cattail leaves may be used as a container for gift cookies and candies. Start weaving as one would weave strips of paper into a flat mat. Add weavers until the bottom of the basket is the desired size. Turn the leaves up and with another strip weave under and over the vertical spokes of the basket. Bend the ends



PLATE XX. Mexican horse and rider.





PLATE XXI. Scrape the pitch from the split rush with a paring knife.

back and weave them into the sides for finishing the edge. A lid may be made in the same way. Select wider leaves, so that the top will slip over the lower part of the basket. Practice with strips of paper before weaving with cattails. The basket should be kept damp while working.

#### WAYS TO USE THE COMMON RUSH

The common rush seems to be like the material the Mexicans use for braiding the horse and rider. See Plate XX. They also use it for making baskets. When braided, it is firm and tough. The long strips make splicing unnecessary for small articles such as hot pads and glass coasters. New lengths may be added by overlapping the ends, as in braiding cornhusks. The split rush is ideal

for basketry material where raffia is commonly used. See Plate XXI for scraping the pith from the split rush. This material absorbs dye readily.

### HOW TO MAKE A TWINED BASKET

Unlike the coil method in twined weaving, the warp splints are enclosed by the crossed twining of two or more weft strands.

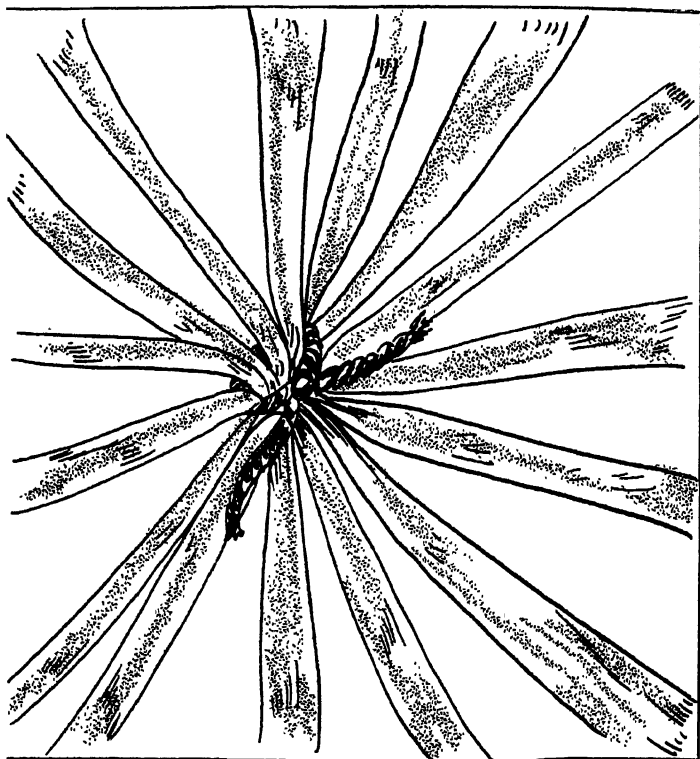


Figure 9. Tie the warp splints with string.

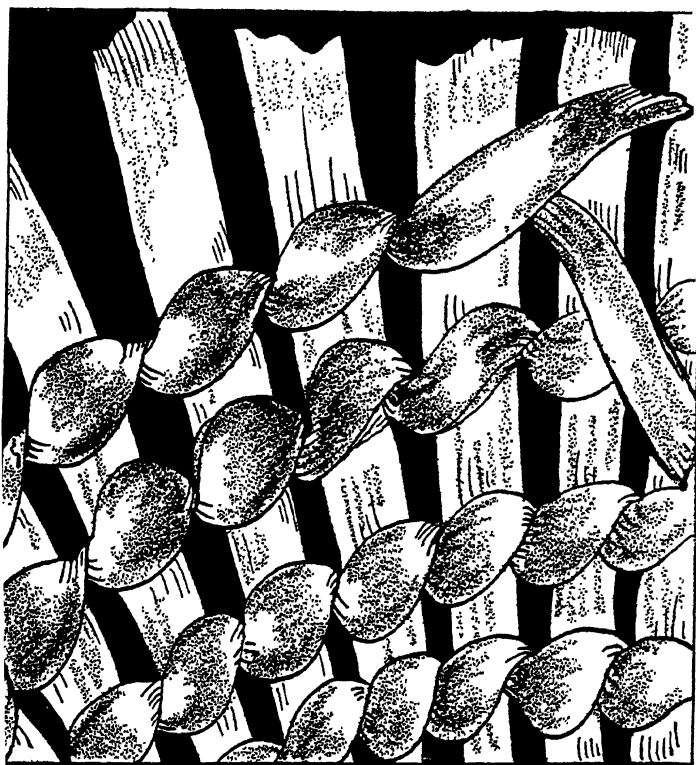


Figure 10. Cross wefts 1 and 2 around each warp splint.

For the warp splints, take a number of the split or whole rushes which have been flattened and crisscross them to form a star or the radii of a wheel. See Figure 9. To make the center secure, tie with a piece of thread. Dampen the rush.

The weft strands should be of the split and scraped rush. They may be of contrasting colors. Cross the wefts and hold them in place at the center of the warp with

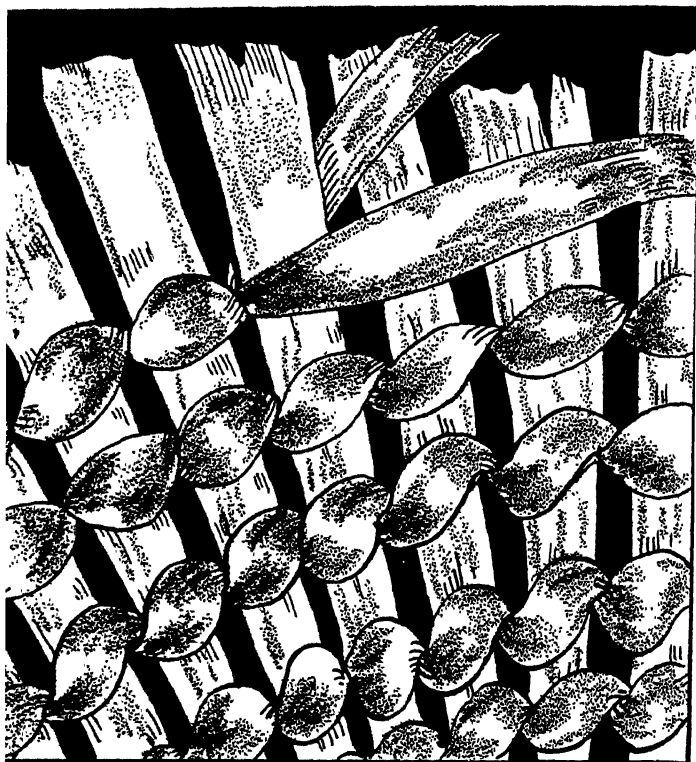


Figure 11. Cross weft 1 over each warp and around weft 2.

the left hand. Bring the back weft to the front of the warp and the front weft to the back of the same warp spoke. Press them together firmly. Continue to weave in this manner around the spokes of the warp. On the second row, insert another warp so that there will be an uneven number of warp ends. Weave under and over the warp until the bottom of the basket is formed. See Figure 10 for details of this weave. It may be necessary



Figure 12. A single weft may be added.

to add more spokes as the base increases in diameter. For the side walls of the basket, turn the spokes up and continue to weave. As a variation, the rows may be left more open.

Another weave is to use the two weft strands but twine one over the warp and the weft all of the time rather than alternating the two weft strands. A single weft may be woven under and over the warp between the rows for



Figure 13. Braid wefts 1, 2, and 3 around the warp.

variety. Details for these methods are shown in Figures 11 and 12. In Figure 11, two warp strands are skipped.

A braided effect is attained by using three weft strands. Each strand passes over two warp strands and under one on the inside. When it is finished, it gives a twined or rope appearance on the outside. It makes a heavier basket. Figure 13 gives the details of the braided weave.

There are two ways of disposing of the warp at the



Figure 14. The warp is bent over at the top of the basket.

border of the basket. One is to cut the warp strands off and the other is to fold them down into the inside and bind them with the weft. The latter method makes a stronger weave.

As each splint is bent over, it becomes a third strand combined with two weft strands, and the braided weave is used to finish the edge. See Figures 14 and 15 for the inside and outside details of folding the warp ends.

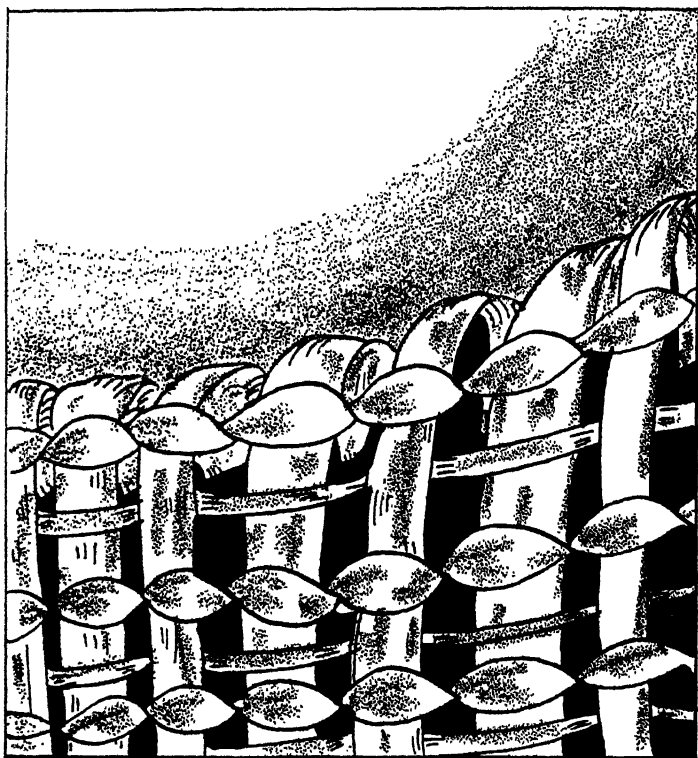


Figure 15. Cut the warp on the inside of the basket.

When the basket is finished, allow it to dry slowly. It is not necessary to apply varnish or shellac to preserve the rush.

Purses, bread trays, sewing baskets, and market baskets are a few of the articles that could be made using the twined basket technique. Patterns in contrasting colors may be added for decoration. Use an all-purpose commercial dye for the rushes.



## CHAPTER FIVE: CLAY

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CLAY modeling is one of the world's oldest crafts. There is hardly a primitive people that have not fashioned useful and ornamental objects of the native material found at their feet. Fired bricks over ten-thousand years old have been found. The Egyptians made glazed pottery as early as three thousand B.C. It was practiced by the Chinese thousands of years ago. It is a craft that is relatively unaffected by material shortages and expensive equipment purchases, excluding a kiln.

Clay suited to modeling and pottery-making is found in nearly every locality. To make a simple test, take up an amount of the soil sufficient for making a brick 1 x 1 x 4 inches. Form the clay into a brick by patting it with the hands and a ruler. Make the measurements accurate. Note the shrinkage when the clay is completely dry. Fire in a kiln and make another measurement. The shrinkage is an important item in estimating the dimensions of the finished piece of pottery. If the brick does not crack in the drying and in the firing, it is suited for pottery-making and modeling. Ordinary dirt will crumble. Sometimes a clay has too much stone and vegetable matter in it. Then it can be cleaned by running the pulverized



PLATE XXII. Breaking clay.



PLATE XXIII. A homemade sieve.

clay through a fine wire screen. Small pieces of pottery may be made instead of a brick in testing the clay for drying and firing. However, a brick is easier to measure.

### PROCESSING THE CLAY

Clay dug from hills and stream beds should be processed. The dry clay is first pulverized by breaking up the lumps with a hammer, Plate XXII, or placing it in a strong canvas bag and pounding it. A pottery or a school having large ceramics classes mill their own clay. The hard lumps of clay are poured into the large round mill and a heavy roller crushes the clay.

The powdered clay is then sifted into a tub of water. It should be allowed to stand overnight. The excess water is dipped off the top. The wet clay is stirred briskly with a wooden paddle. A tub equipped with mechanical paddles, called blungers, is used in mixing large quantities of clay. The clay is about the consistency of very thick whipping cream. This is known as slip.

To remove lumps from the slip it should be screened with a sieve no coarser than a fly screen. The sieve in Plate XXIII was made by tacking fly screen over a wooden frame. A fruit sieve or a colander can be used.

In order to dry the slip so that it can be used for pottery and modeling, it may be allowed to dehydrate in a large tub. If poured upon several thicknesses of newspaper the water will be absorbed. In a ceramics studio, the slip is poured upon a plaster-of-Paris slab and the moisture is absorbed by the plaster. When ready for handling, the clay should be stored in a zinc-lined bin or in covered stoneware crocks.

Ancient Chinese potters seasoned their clay by letting it stand for the next generation to use, always using what had been prepared for them and preparing new clay for the next potters in their family. We do not season our clay that long. However, the consistency is improved by allowing the clay to stand for a week or more.

To make dry chunks plastic again, they should be completely dried, pulverized, and soaked in water. Partially dry clay is difficult to rework.

### GROG CLAY

For those who wish to make large, heavy pieces, grog clay is a safer medium in which to work. Grog clay is particularly adapted to large pieces of pottery and ceramic sculpture. It is not only of an interesting texture, but also has the advantage of a relatively small shrinkage. The pieces made of grog clay are almost indestructible to breakage in the building as well as in the firing.

Grog clay is a combination of pure clay flour and coarse

clay flour which has been fired in a kiln. The grog may also be pulverized bisque ware, drainage tile, or bricks. It should be screened through a twenty-mesh screen—a fly screen will do—to secure the desired texture. The grog clay which has proved most successful is a mixture of half clay flour and half grog. The two are mixed dry and then moistened with water. It should be allowed to stand overnight before using. When it is too wet, it may be dried out on newspapers or a plaster slab.

The dilution of pure clay with grog may have derived its name from the term “grog” used by the English sailors in reference to the diluted rum served to them. “Old Grog,” the nickname of Admiral Edward Vernon, was originally given him because of the coarse silk and mohair “Grogan” cloak he wore. Later he initiated a diluted rum to be served to his sailors which was later called “grog.”

The grog clay will seem more firm to handle, quite crumbly, and less plastic. It should be used in much the same way that plain clay is used except that the coils should be thicker, shorter, and flattened, if handling is too difficult. Since the great weight will cause the walls to sag, an electric fan should be turned on the piece to harden and dry the clay. Turn the hand potter's wheel at intervals so that one side will not become too dry. In spinning the wheel, care should be taken to turn it slowly to prevent distortion. Slip is applied between the coils. The slip is made of the basic clay flour and water. If the grog clay seems to be drying and more tooling should be done, water may be applied with a spray gun or a sponge.

The finer the clay grog, the finer the detail of the finish.

The grog and the basic clay may be different. If there is fine bisque dust, it will affect the basic color of the clay. Particles of grog will rough up with a tool. A flat wooden tool or a rubber mallet tapped against the surface will drive the grog into the body of the piece and give a smooth surface without covering up the grog. Hammered marks, grooves, carving, relief decorations in grog clay all make interesting surfaces. Colored slip may be sprayed or sponged onto the clay. Different colors of grog clay may be used on the same piece, in ceramic sculpture.

The drying of grog clay does not require as much care as pure clay. For two days, leave a dry cloth over the grog piece. Remove the cloth and continue to dry it at room temperature. Always protect the open rim, handles, spout, or any other projections on the piece by covering them with a smaller cloth. These projections should be dried last. A vase or a bowl is usually turned upside down to retard the drying of the rim. The piece should be completely dry before firing. However, pieces that were rigid but not dry have been fired with no breakage. A piece may be forced dry by placing it in an ordinary kitchen-stove oven for several hours at a low temperature. The clay may warp, however.

Solid ceramic sculpture in grog should be hollowed out so that no section is more than 1½ inch thick. It may be dug out with a spoon or a wire loop tool.

The shrinkage of a grog piece is small when compared to that of the pure clay. The kiln temperature may be higher. The rough edges should be rasped, ground, or sanded after the bisque firing. The clay is too fragile for this to be done earlier.



PLATE XXIV. The bottom of the bowl is shaped in a saucer-shaped mold. At left is the clay prepared for use by the famous Indian artisan. Freshly molded bowls are in the foreground.

In glazing grog pieces, some care should be taken. The rough texture requires a great amount of glaze. There is less running and flowing of the glazes in the firing. Transparent and translucent glazes are most effective for this material. Slip and underglaze decorations are well adapted to the smoother textures of grog pieces. If the clay absorbs less than six per cent moisture, it may be considered durable for outdoor use.



PLATE XXV. The fire is started with cedar wood.

### MARIE MARTINEZ, POTTER OF THE SOUTHWEST

Those who have traveled in the Southwest have seen Indian potters using their native clays for making graceful pottery jars. Marie Martinez of San Ildefonso is considered the best potter of the Southwest. Her husband, Julian, now dead, painted the designs. They are famous for their polished black ware with dull-finished decorations.

Plate XXIV: The potter uses a saucer-shaped mold, called a "puki," to form the base of the bowl and to make



PLATE XXVI. Dung cakes are piled over the pottery.

turning casier. She sets one jar aside to let the walls harden. The bowl is shaped with the hands and "kajepes," curved sections of gourd rind. The bowl shrinks away from the puki as it dries. When the vessel is leather hard, it is polished with a round pebble. The painter uses brushes made from the fiber of yucca leaves. He paints a design on the bowl with slip. The slip design is not polished. When fired, it remains dull.

Dry cedar sticks are laid out on the ground and the jars are then stacked upside down over the wood. More





PLATE XXVII. Stirring the smoldering fire.

wood is added. Notice the care with which Marie is stacking the wood, Plate XXV.

Pieces of tin are placed over the pottery and the cedar sticks. Then dung cakes are stacked over the mound. Plate XXVI.

Finally, a tubful of manure is piled on top of the home-made kiln. The fire is started and the smothering effect of the manure cuts off the oxygen and turns the iron oxide of the red clay black. Marie and Julian are stirring the smoldering fire, Plate XXVII.

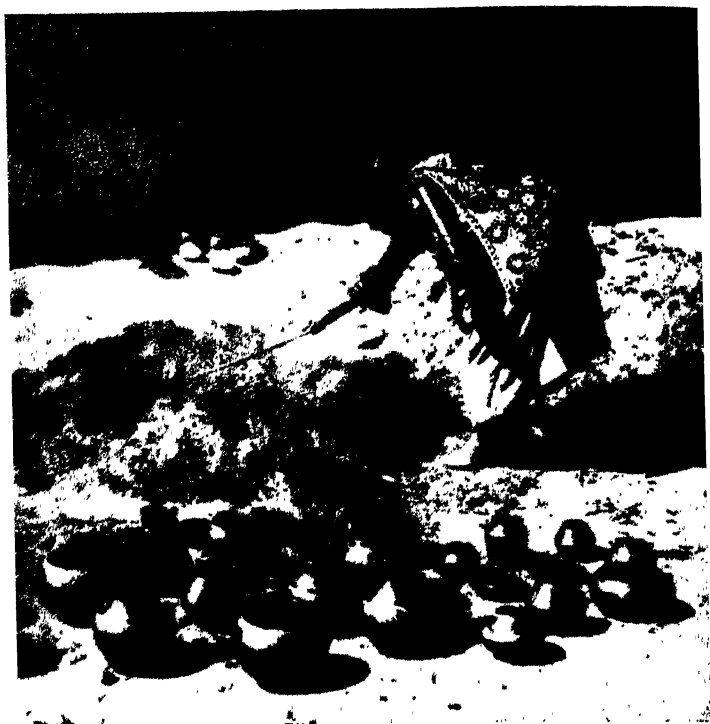


PLATE XXVIII. The pieces are lifted out with pokers.

Plate XXVIII: After the pottery has been fired all day, each piece is uncovered, lifted out with pokers, and allowed to cool.

Notice the dull and polished surface of the designs in Plate XXIX. Her skill and artistic craftsmanship, coupled with use of materials native to her locality, have made Marie Martinez world famous.

### COIL BOWLS

The coil bowls in Plate XXX were constructed with-

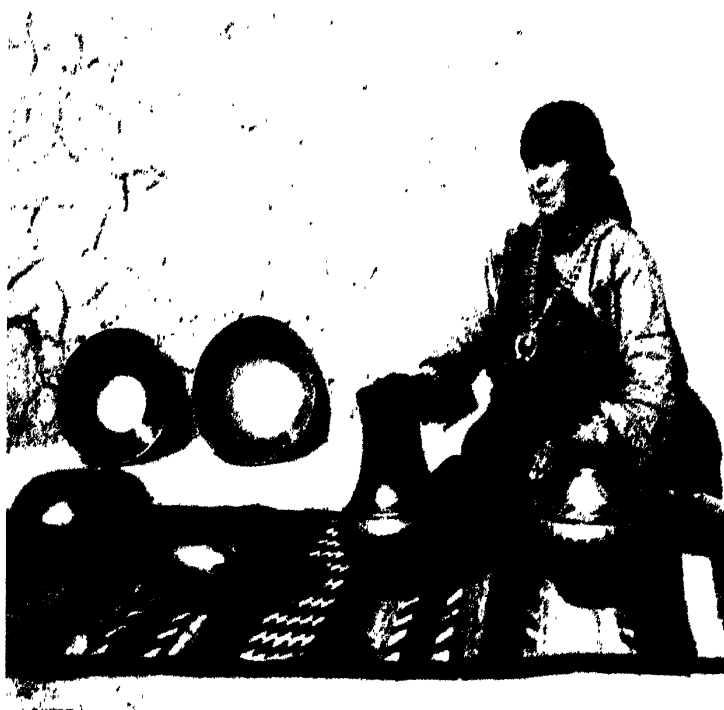


PLATE XXIX. The designs are made by the contrasting of dull and polished areas.

out the use of a potters wheel. The coils may or may not be smoothed. The round coils make an interesting form for small bowls and jars. They are simple for young children to construct.

A slab of plaster is a good base on which to build small pieces of pottery and little figures. A board may also be used. A number of plaster slabs can be made easily. Each member of the art class should bring a medium-sized pie tin from home for the mold. Grease the pan with vaseline or lard.



PLATE XXX. Coil bowls made without the aid of a wheel.



PLATE XXXI. Dry particles stay on top.



PLATE XXXII. Pour the plaster into the pie tin.

NOTE: Plaster of Paris is known as molding plaster. It is not to be confused with the kind of plaster used for walls. Molding plaster can be purchased at a lumberyard for about \$1.50 a hundred pounds. It should be fresh. Dental plaster purchased at a drugstore is much more expensive and is a finer quality than necessary to use.

Spread several thicknesses of newspaper on the floor and table before mixing the plaster of Paris. Remove all jewelry. Into a bowl half filled with water, sift fresh molding plaster, handful by handful. Plate XXXI. When the water has taken up as much of the plaster as it can and dry particles stay on top of the surface, allow the mixture to stand for two minutes.

With the hand or a spoon stir the plaster until it becomes creamy but not hard like fudge candy. Plate XXXII. Pour it into the form. Tap the pie pan gently at the side so that the air bubbles will rise to the surface. A crockful of plaster should fill several pans.

DO NOT RINSE THE HANDS OR THE CROCK HAVING PLASTER IN IT INTO THE SINK. The plaster will set inside the drain and clog the pipes. Wait until the plaster has hardened and crackle it off the hands. Add water to the bowl after the excess plaster has set and crackle it off the hands onto a newspaper. Add water to the bowl after the excess plaster has set and it will crack out easily. WRAP THE

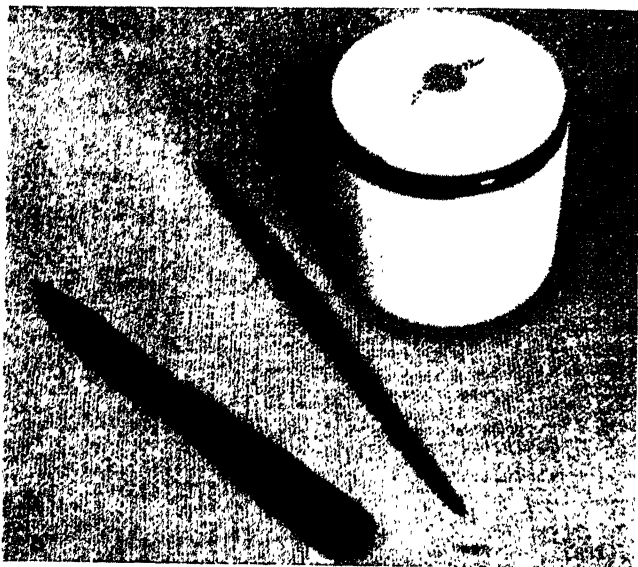


PLATE XXXIII. The tools for making a coil bowl are simple.

SCRAPS OF PLASTER IN THE NEWSPAPER USED FOR COVERING THE TABLE AND BURN IT.

Besides a plaster slab or a board for the base of the coil bowl, the potter will need a few other simple supplies. Plate XXXIII. A small face-cream jar with a lid for storing the slip; an old water-color brush for painting the slip on the clay before adding new coils; a piece of outing flannel or an old cloth which can be dampened and used for covering the unfinished pottery; a square of waterproof cloth, shower-curtain material, an old raincoat, rubber sheeting, or oilcloth, for keeping the unfinished bowl damp; a potters knife or a paring knife for cutting the coils; and a low, wide-mouthed jar for water. Often a gallon tin can is used to cover the slab and the pottery between working periods. In that case, a waterproof cloth is not necessary.

Decide upon the shape of the jar or bowl to be made. Some use a pattern cut out of tin or cardboard, called a templet, for guiding the shape of the piece. If the craftsman has a shape well in mind, a pattern is not necessary. The form should be simple. An S curve is not a good shape, and the form should not change too suddenly from a rounded to a straight side.

Dampen the slab of plaster so that the clay will adhere to it and yet not be dried out. Press a ball of clay upon the slab and flatten it. The bottom of the bowl should be  $\frac{1}{2}$  inch thick. With a tin can or a cookie cutter, cut a round base for the bowl. On a smooth metal-covered board or another plaster slab, roll out a coil of clay. The clay should be rolled with the fingers (see Plate XXXIV) rather than the palm of the hand. If it tends to flatten



PLATE XXXIV. Roll the coil with the fingers.

on one side, pat it until it becomes round. It may take some time to master the skill of rolling round and even coils.

Plate XXXV: Apply a coating of slip—clay mixed to a creamy consistency with water—to the clay base and lay the first coil in place.

Plate XXXVI: Cut the ends of the coil at an angle and add slip to the joint. The coils of the bowl may or may not be smoothed together. If they are smoothed, the walls are supported with the fingers while the thumb is used



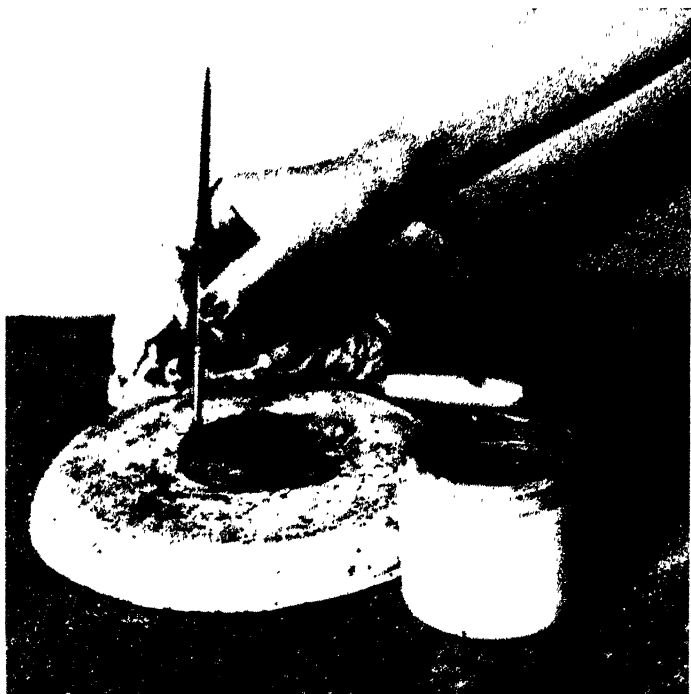


PLATE XXXV. Apply slip to the base for the first coil.

to slip some of the clay from the upper coil across the space to the lower coil. The fingers are kept inside the bowl when the outside is being smoothed and outside when the inside is being smoothed.

A series of concentric coils may be placed one on top of the other or in a continuous spiral coil. If the coils are not to be smoothed, it requires more and thicker slip to hold them in place. The coils are placed one on top of the other for vertical sides. In building different shapes, place a coil to the outside of the preceding coil for an



PLATE XXXVI. Cut the ends of the coil at an angle.

outward curve of the wall or to the inside for an inward curve. It may be necessary to allow the piece to dry a little before adding other coils after three or four have been set in place.

If the work cannot be finished, the piece should be covered with a damp cloth and a waterproof cloth and placed inside a cupboard or a gallon tin can so that it will not dry out. If the clay becomes too dry between working periods, it will very likely crack in the drying or firing if other coils are added. It is the problem of the potter to

plan his work so that the piece will be finished before the base is too dry and so that the piece will dry at an even and gradual rate. It may be necessary to dampen the plaster slab if the work is progressing slowly.

The finished piece should be left uncovered inside a gallon tin can or covered only with a waterproof cloth to retard the drying. After a few days it can be taken out, removed from the plaster slab, and turned upside down. Carve a monogram in the bottom of the base. Place a dry cloth over the bowl, and when the clay looks dry it may be left uncovered until completely dry. As long as the clay feels cool to the cheek it is too damp to be fired.

### CLAY TILES

Clay tiles make useful gifts. They may be used for hot pads, paperweights, or pictures. Young children can make decorative tiles. Press a ball of clay onto a plaster slab or a piece of wood to an even thickness. A pattern made of cardboard from a tablet back is placed on top of the clay, and the tile is cut out with a paring knife or a flat stick, such as a tongue depressor. Figure 16. The design is incised with a pencil to a depth of the lead of a pencil or  $\frac{1}{8}$  inch.

Allow the tiles to dry slowly so that they will not warp. Before they have completely dried, have each worker carve his name on the back of his tile with the pencil point. When they are dry, if there are any rough edges, sand them lightly before firing them. A single color of glaze should be used, The incised lines fill up with glaze, and this adds greatly to the finished piece. The backs of the tiles should not be glazed.

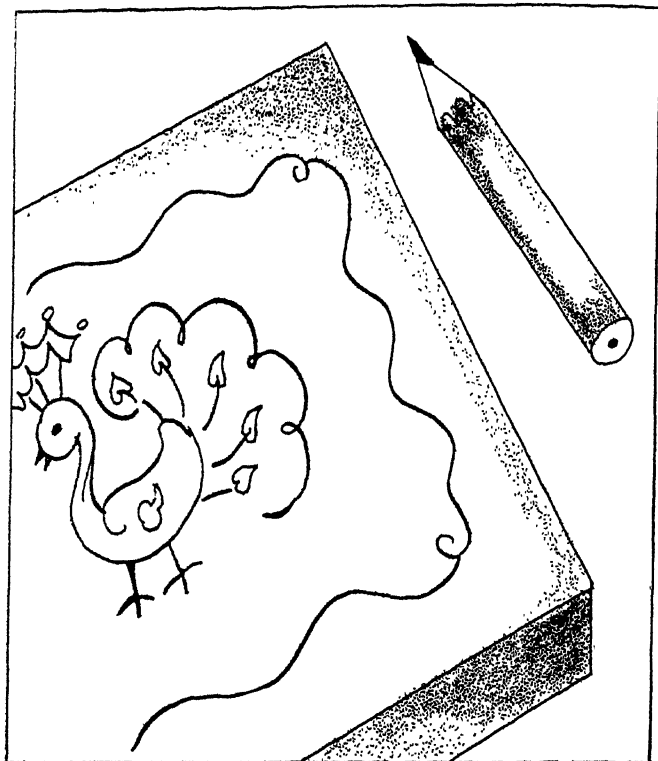


Figure 16. The design is incised with a pencil point.

Glue a piece of felt from an old hat on the back of the tiles to be used as hot pads or paperweights. Fasten gummed picture hangers on the back of the tiles to be used for pictures.

### CLAY BOXES

Boxes of clay are made by the slab method. A large flat slab of plaster or wood, two strips of wood  $\frac{1}{2}$  inch



PLATE XXXVII. Roll the clay until it is level with the two strips of wood.

thick, a rolling pin, and a paring knife or a potters knife are the supplies needed.

Plan the size and proportions of the box. Draw the pattern accurately on paper. The bottom should be made the length and width of the box. The ends should be made the width and height of the box minus the thickness of the bottom, which should be  $\frac{1}{2}$  inch. The sides should be the same height as the ends, and the length minus 1 inch to allow for the thickness of the two ends.

If the box is to be 4 inches high, 4 inches wide, and 6 inches long, the base would be 4 x 6 inches. The ends would be 4 inches long and 3½ inches high. The sides would be 5 inches long and 3½ inches high.

Place a large ball of well-kneaded clay upon the plaster or wood slab. Plate XXXVII shows how the clay is rolled out until it is level with the two strips of wood. Lay the paper patterns on the clay and cut the clay with a knife. The pieces are cemented with a generous amount of slip. The cracks between the base and the walls are filled by slipping a little of the clay from the walls over to the base. Finish the inside in the same way. Support the walls with the fingers as the cracks are sealed with the thumb or a wooden modeling tool.

Decorations may be carved in the clay while it is still damp. Carving on a dry wall often causes the design to chip. Slip and underglaze decorations may be painted. Form decorations may be added by rolling out small coils and pellets of the clay and adhering them to the clay box with slip. Interesting designs can be made by combining coils cut in short lengths, making a wavy line around the box, or designing handles for the box. The lid should have a rim inside the flat surface to hold it in place. A coil of clay fastened with slip may form this rim. These boxes may be used for candy, jewelry, or jam. The ceramic box in Plate XXXVIII has a monogram for the top decoration and handle.

Clay boxes for house plants such as cactus and foliage are attractive. Plan the proportions of the box to suit the needs of the roots and the shape of the plant. Notice the flat rim at the top edge in Plate XXXIX. This rim acts

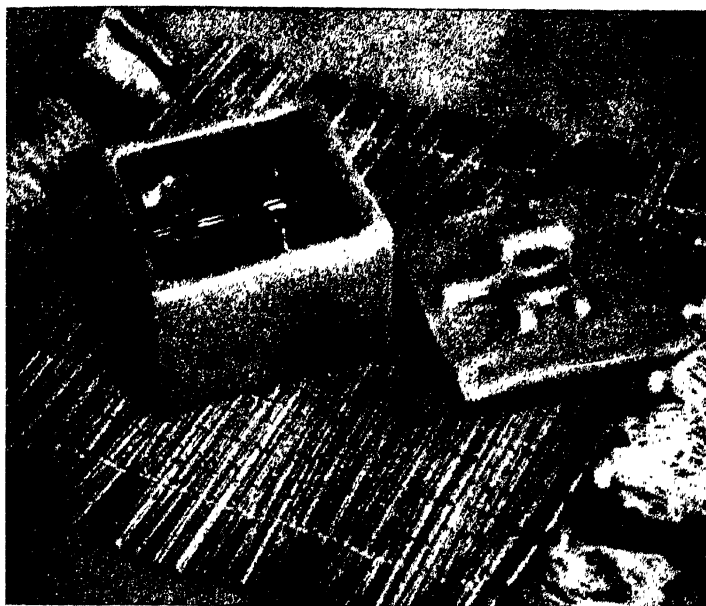


PLATE XXXVIII. A ceramic box on a reed mat.

as a cover for part of the earth in the box. Grog clay is particularly well suited in texture and strength for plant boxes. Leave the inside unglazed. The coloring in the glaze should be neutral so that it will not detract from the plant.

### BUILDING POTTERY ON A WHEEL

Electric potters wheels and kick wheels are often too expensive for the average person. Small hand-turned decorator wheels may be used for building pottery. The technique is similar to the coil-built bowl except that tools are used to help shape the piece while the wheel is spinning.



PLATE XXXIX. The rim covers part of the earth in the box.

Place a ball of well-kneaded clay in the center of the spinner top. Press it down flat with the hands. It should be fully  $\frac{1}{2}$  inch thick when flattened. Select a potters tool and hold it like a pencil in the right hand. Spin the wheel. Bring the right and left hands together and brace the tool with the thumb and forefinger of the left hand. Place the point of the knife gently onto the center of the clay base. Holding it steady, draw it gradually to the outside of the base. The tool should always be held directly in front of the potter. The clay will tend to drag the tool to the





PLATE XL. Hold the knife to the right of the piece.

right. Use an even pressure with the left and right hands to hold the tool steady.

The spiral which is formed by drawing the tool from the center to the outside will indicate the size of the base. Hold the potters knife in a vertical position with the sharp edge toward the potter. Steady the knife with the



PLATE XLI. With a wire-loop tool, cut away the high places.

left hand. Support the arms by pressing the elbows against the ribs. This is the only time a tool is held at the right of the piece. See Plate XL. The tool must be held firmly or the circle will not be cut. The beginner usually tries to cut through the clay too fast. It requires some practice to be able to cut the base.

To make the base level, spin the wheel. Holding a pointed wooden tool lightly against the surface, mark the uneven parts on the base. Plate XLI. With a wire loop tool, cut away the high places and continue to level the base.

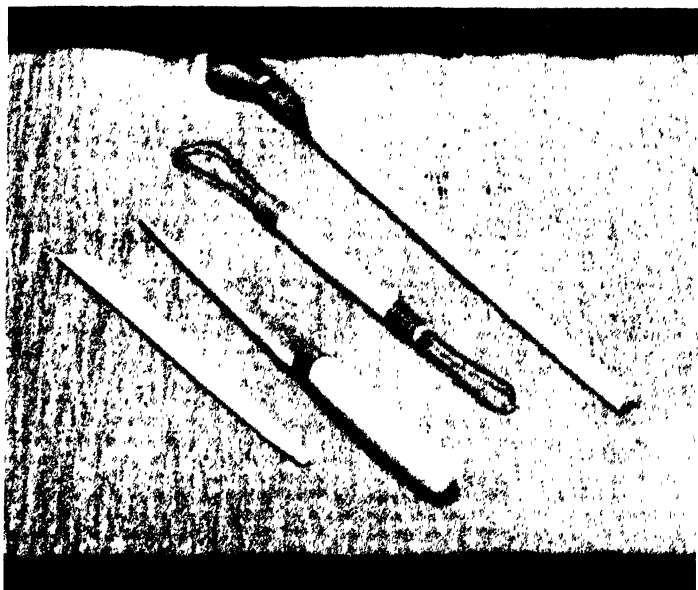


PLATE XLII. The essential tools.

There are a number of tools one may use for pottery. The ones pictured in Plate XLII are the essential ones. A loop tool was made by wiring a piece of a saw blade to a dowel stick. Corset stays make excellent metal loops for tools.

A small bowl should be made as a practice piece. After the base has been made, bevel the edge with a wire loop tool for the first coil. Roll out a coil of clay on a zinc-covered board, a smooth table top, or a slab of plaster, marble, or slate. A painted surface is not satisfactory, since the clay will pick up the paint. Use the fingers for rolling out the coil. If the coil develops a flat side, pat it out with the hand and continue to roll. Flatten the coil slightly. Cut one end of the coil, and, after a generous



PLATE XLIII. Support the walls with the fingers.

amount of slip has been brushed upon the beveled edge, place the coil on the base. Press it down but do not distort the shape. Cut the end of the clay at an angle and add slip; then press the ends together.

Using the thumb, slip some of the clay from the coil across the opening to the base. Plate XLIII shows how the walls are supported with the fingers. Do not pinch or squeeze the clay.

Spin the wheel. Holding a wooden tool firmly with both hands and bracing the elbows against the waist or

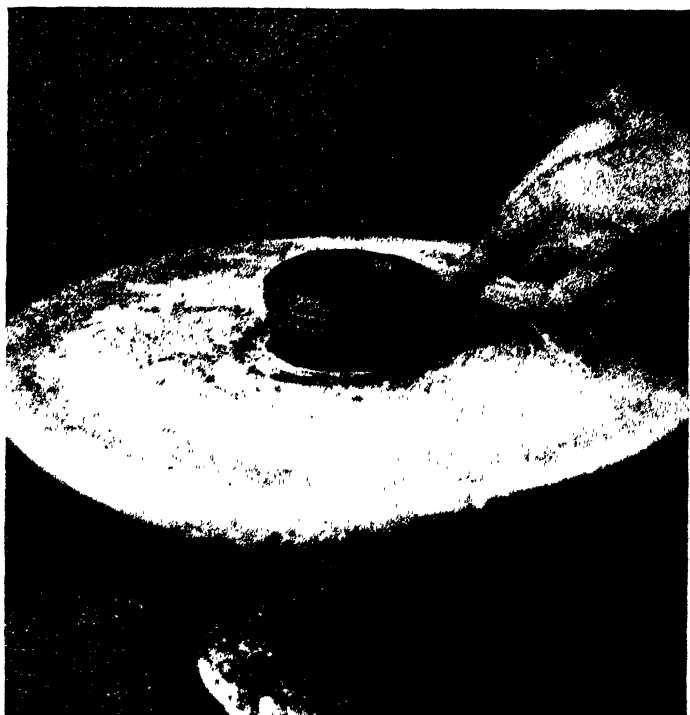


PLATE XLIV. Mark the high spots on the clay.

against the edge of the table, let the tool touch the high spots on the clay as shown in Plate XLIV. Use a wire loop tool to remove the uneven parts. When working on the outside, always work with the tool directly in front of the bowl. Holding the tool firmly, work until the piece is perfectly round. The inside is tooled in the same way that the base was smoothed.

If it is necessary to retard drying, cover the piece with a damp cloth while rolling out the next coil. Continue to add coils, using slip to cement them, and smooth the walls

on the inside and the outside. Air spaces between the coils will cause a piece to break, so smooth the coils together carefully. Spin the wheel and tool the walls of the piece smooth after adding each coil. Care should be taken to allow the walls to stiffen slightly to support the succeeding coils. If a piece becomes hard before it is finished, no new coils can be added, since the fresh clay would shrink at a different rate and cause the jar to crack in the drying or the firing.

Cut the top of the coil off straight with a potters knife. Cut just enough off to make the coil even. Grasp the handle of the knife in the right hand with the sharp edge of the blade to the left. Bracing the elbows against the ribs, hold the tool firm with the left hand. Spin the wheel. Bending forward from the waist, gradually force the point of the knife into the wall of the clay. Do not let the knife waver. With some practice a coil can be trimmed so that the excess clay is lifted up with the knife in one continuous piece.

Make spouts, handles, and decorations of clay the same consistency as the body of the jar. The thickness of the clay should not change suddenly. The rim of the piece should be smooth and rounded. A sharp edge is unpleasant to touch, and the glaze will not adhere to it properly.

As soon as the jar is finished and will hold its shape, cut it from the spinner top with a thin wire or a linen thread. Grasp the ends of the wire, hold the wire firmly against the spinner top, and cut through the clay with a sawing motion.

Turn the bowl upside down on the spinner and center

it. Place small pieces of paper and wads of clay against the bowl to hold it in place. With a pointed wooden tool, check the centering of the vase. Then, holding the tool about  $\frac{1}{2}$  inch from the outside edge of the base, mark a circle. Dig out the center of the bottom  $\frac{1}{8}$  inch deep by spinning the wheel and using a wire loop tool. Apply an identifying monogram.

The greatest of care must be taken in drying pure clay pieces. Rapid drying causes the clay to shrink unevenly and to crack. One should allow from a week to ten days for drying, depending upon the weather. First, cover the bowl with a damp cloth and leave it in a cupboard or under a large tin can. If neither is available, cover the piece with a damp cloth and a waterproof cloth. If the piece has handles and a spout, wrap them separately with smaller cloths and retard their drying until the rest has dried completely. The piece should be dried upside down if possible to retard the rim from drying and shrinking unevenly. If the jar cannot be turned over, a light bulb placed in the mouth of the jar will serve about the same purpose.

After several days, remove the cloth and leave the piece in a closed cupboard or under a waterproof cloth. When the clay begins to appear dry take it out of the cupboard or uncover it and place it on a shelf in the room with only a dry cloth over the entire piece. The handles and spout should still be covered separately. After another day remove the cloths, and when the clay feels dry to the cheek it is ready to be fired. Clay pieces before they are fired are known as "green ware."

NEVER PICK UP A "GREEN WARE" PIECE BY THE HANDLES.

## DESIGNING POTTERY

Art-ware pottery is often ornate and poor in design and form. Simplicity and gradual transitions in lines are more adapted to clay. A flared bottom or sharp edge is a structural weakness. Fragile spouts and handles are unsuited to this medium.

The shape for a pottery bowl or vase should be determined by its future contents. Will the flower stems be long or short? Are the flowers delicate or very large? Is the vase to be used in a bedroom or in a large living room? Is it to be decorative while it is empty as well as when filled? What is the shape that would best hold the contents? Does the bottom seem to set securely on the table? Think of the vase or bowl as being shaped by its contents from within its walls. Do not think of it in terms of a silhouette outline, but consider its volume and purpose in planning each piece of pottery.

The cake jar in Plate XLV is a variation of the cylinder. The brown underglaze leaves were painted at random around the walls of the piece. It is a useful and decorative piece in the kitchen. The lid, waxed mahogany, was turned on a lathe.

The large teapot in Plate XLVI holds twelve cups. Since such a weight would be difficult to handle, a fragile form was not used. The spout and handle match each other in shape.

## SLIP CASTING

Slip casting is an interesting process. Most ceramic figures and dishes purchased in stores are made in this





PLATE XLV. A cake jar with a wooden lid.

manner. Duplicates may be made, although the original shapes are made by hand.

First, make a model. For a one-piece mold for a cup or a tumbler, build up the form in clay. The form is built upside down and solid. Use the top of a potters hand wheel for the base. Smooth and shape the model as one makes a piece of pottery. Handles are usually applied after the cups have been cast.

Second, sponge some water glass—sodium silicate—thinned with water on the spinner top so that the plaster



PLATE XLVI. A large teapot.

will not adhere to it. The clay need not be covered with water glass. Make a wall around the spinner top with cardboard, linoleum, or galvanized tin. The wall should be 2 inches higher than the model being cast. Fill the cracks with clay. Apply water glass to the wall.

Third, mix a crockful of plaster-of-Paris molding plaster. Pour the plaster over the model, tapping the side of the wheel gently to cause the air bubbles to rise. If the mold is not filled, mix more plaster and complete the mold. Be sure that it is sitting level.

When the plaster has turned hot and later cool, the wall may be removed and the water clay model pulled out in little pieces. Dry the mold in the wind and sun. Do not use an oven for drying plaster of Paris.

Fill the dry mold with slip made by mixing clay or pulverized dry clay in water. If there are lumps in the slip press it through a fine sieve. It should be the consistency of whipping cream. The plaster will absorb water from the slip and form a deposit of clay around the inside wall of the mold. Pour the mold full. Plate XLVII. The plaster will absorb the water and cause the level of the slip to lower. Tap the side of the mold gently to make the air bubbles rise. Fill the mold three or four times as the slip sinks down. To see how much clay has been deposited on the walls of the mold scrape the top edge. When  $\frac{1}{4}$  inch has adhered to the inside of the mold pour the thin slip from the center into the jar containing slip and scrape the top edge of the mold clean.

The plaster will continue to draw water from the deposit of clay on the inside of the mold. Some of the moisture will be evaporated by the air. As the slip casting dries it will shrink away from the mold. If it tends to stick to one edge, release that edge by slipping the thumbnail under the clay.

When the casting has shrunk away from the plaster, tip the mold over and let the casting slide out on the hand. It should be dried upside down. Cover the rim with a dry cloth to prevent the edge from warping. Put the casting in a cupboard or under a waterproof cloth to dry. When it is leather hard, turn it right side up and allow it to dry completely. The edges should be sanded

smooth and rounded with very fine sandpaper or steel wool. Smoothing, however, should not take the place of good work.

Another piece may be cast after the mold has dried. The drying may be hastened by placing the mold in the breeze of an electric fan. The mold should be turned from time to time so that all sides will be drying.

More complicated pieces may be cast, but pieces requiring more than a one-section mold should be designed so that the parts of the mold will fit together and can be removed without marring the casting. This requires skill and much experience. Ceramic sculpture is oftentimes modeled first in wet clay or plasticine and a mold with two or more pieces is made. Then grog clay is pressed in the mold to a thickness of from 1 to 3 inches. For smaller pieces, the sculpture is slip cast. Surface details may be added later. It is a safer way of making large ceramic sculpture. The solid pieces, even though hollowed out by hand, may crack in the firing.

### CERAMIC COSTUME PINS

Costume pins may be made of clay. If more than one is to be produced, the form is first modeled in water clay or a commercial oil clay. The design should be compact and must not have undercutting parts. It should be no thicker than  $\frac{1}{2}$  inch. Smooth the forms with water if wet clay is used. The model should be made on a piece of glass or some other slick surface. Make a wall of clay high enough to keep the plaster from running over the base.

Mix a small bowlful of plaster of Paris. Use petroleum jelly, lard, or water glass to keep the plaster from adhering

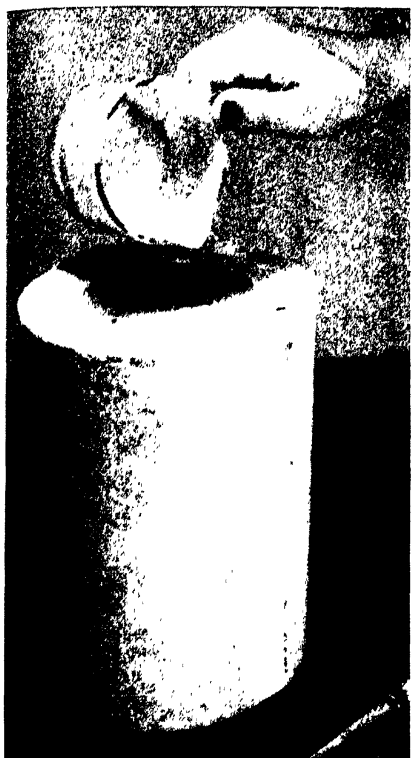


PLATE XLVII. Pour the mold full—to a level with the top as shown.



PLATE XLVIII. Press the clay into the mold.

to the base. When it begins to get creamy, pour a thin layer over the model. Blow on the plaster to remove air bubbles that may have formed between the clay and the plaster. Cover the model with enough plaster to make the mold 2 inches thick.

When the plaster has set, remove the mold from the base and pull out the clay. It may be necessary to scrape the edge of the mold if plaster has crept under the model.



PLATE XLIX. Cut the excess clay from the impression.

To make a pin, fill the dry mold with more than enough clay, Plate XLVIII. Pack it in carefully. With the extending clay, pull out the impression. In Plate XLIX, the excess clay is cut off with a knife. If the clay is rough, it may be smoothed with the fingers and some water.

Dry, fire, and glaze the pin. Costume pin fasteners are cemented in place after the pin has been glazed. Use transparent cellulose glue. If a safety pin is to be used, a groove should be cut in the moist clay. The pin is

cemented in place after the glaze firing. It may be necessary to glue a piece of cloth across the back of the costume pin to hold the safety pin more securely.

### ORNAMENTATION

Besides ornamenting a piece with form decorations, colored clays or slip and mineral colors, known as underglaze colors, may be used. Both may be obtained from a ceramics supply company. The slip, sometimes also called engobe, may be made of different colors of native clays having a shrinkage similar to that of the body of the vase upon which it is to be used.

Mix the slip to a creamy consistency by adding water to the wet clay or to the finely pulverized clay flour. Plan the design by painting with a water-color brush on a plaster slab. After the design has been worked out, paint it on the wet "green ware." The slip should not be too thick. If it is, it will crackle.

A trailed design may be applied with thicker slip by filling an eye dropper with slip and trailing on the decoration. The slip should be thin enough to flow evenly, but it should not be watery.

Designs may be scratched directly on the surface of the ware. The slip is scratched away to the body of the piece. This method of decoration is known as "sgraffito." It comes from the Italian "sgraffiare" which means "to scratch." After a piece which has been decorated with slip has been fired once, a transparent glaze is applied and fired.

A spiral may be cut through the slip to the body of the clay by pressing a pointed wooden tool through the slip

so that as the wheel is turned the tool takes off the slip. The piece should be covered with only a thin coating of slip. The body of the clay should still be wet. The slip may be applied with a sponge by patting it on smoothly, or it may be sprayed on from a fly sprayer.

Underglaze painting offers a wide range of color and design. Underglaze colors may be purchased from ceramic supply houses in 1-ounce packages. Larger amounts may also be obtained. There are many colors from which to choose. These colors are painted directly on the biscuitware.

Plan the design. Use a brush in making a number of trial sketches. The shape of the brush strokes, variations in the thickness of the long lines, and gradations of color made by adding water to the brushful of paint can all be employed to good advantage.

The dry colors are mixed with gum arabic and water. Dry lumps of gum arabic are dissolved by soaking them overnight in cool water. For a small amount of color, dip the brush in the gum arabic, pick up some of the dry color on the brush, dip the brush in water, and mix the paint on a glass or a nonabsorbent surface. A larger amount of color is mixed by dipping out half a teaspoonful of gum arabic, adding the dry color, and mixing a few drops of water. If too much gum arabic is added, it will blister and peel. If there is too much dry color used, it will powder off. Too much water will make the color pale and the lines thin. Practice until the right amount of each ingredient is used.

Trace or draw the design on the biscuitware. This may be done with a lead pencil or a piece of charcoal. Do not



use carbon paper. Do not erase with a rubber eraser. The glaze will not adhere to an oily surface.

After the design has been painted on the bowl with even strokes, a transparent glaze is applied. Spraying is the best method. If it is to be brushed or dipped, the glaze should be thicker, but care must be taken not to dissolve the underglaze colors.

When the piece is fired, the colors will be about as deep as the wet underglaze colors were. The glaze will look like a thin coating of glass. Underglaze colors may be added to colorless glazes for tinting. Only a small amount of color is necessary. A test piece should be fired before putting an experimental glaze on a piece of pottery.

## GLAZES

Glaze is actually composed of ingredients which will melt and become a thin layer of glass on the clay when the piece is placed in a kiln and fired to a high temperature. Glazes are colored by the presence of mineral oxides and carbonates. There are many factors which affect the color of the glaze. The ingredients may react to produce variations. The texture of the surface may catch more glaze and cause an interesting pattern of color. The intensity of the heat may produce a wide range of color.

There are transparent glazes. These are usually glossy and may or may not be colored. The enamel glazes are opaque and usually applied heavier than the transparent glazes. A mat glaze is dull and usually opaque. For most purposes, little else need be known about glazes. It is a study involving chemistry and art, but the average person

can have a reasonable amount of success without making a complete study of glazes.

To mix a glaze, it is necessary to have a scale which measures gram weights; a fine brass wire screen, 60 or 80 meshes to a square inch; and a pan in which to mix the glaze.

Balance the scales. Line the ingredients up in the order that they are listed in the recipe. Measure the ingredients carefully, checking the name with the recipe and the container label so that no mistakes are made. Dry-mix the powders. Add a little water at a time to make a smooth paste. Add more water until the glaze is a thick creamy consistency. Pass the glaze through a fine mesh screen. Add a tablespoonful of gum arabic which has been dissolved in cool water over night. Add water if necessary.

To increase the glaze batch, multiply each amount by a number which will yield a sufficient amount of glaze.

A medium-sized batch of milky transparent glaze which matures at a temperature of cone .07 or cone .06 (melting point measured with a Sezer cone) includes the following ingredients:

Whiting .....	60 grams
Kaolin .....	120
Lead Carbonate (White Lead) . . . . .	360
Red Lead .....	80
Zinc Oxide .....	60
Tin Oxide .....	40
Flint .....	120
	<hr/> 840 grams

After the piece has been "bisque-fired," the glaze is applied. Dip small pieces into an open-mouthed jar con-

taining the thoroughly stirred ingredients. The pieces should be dipped several times until a coating of glaze has accumulated on the bowl to a thickness of about  $\frac{1}{16}$  inch. Fingermarks may be covered by painting those places with a soft water-color brush. The glaze should be scraped from the bottom of the piece so that it will not stick to the tripods in the firing.

Another method of applying glaze is to brush it on. An inexpensive soft flat paintbrush is used. The glaze should be stirred thoroughly. To glaze the inside, pour a cupful of glaze into the bowl or jar and turn the piece slowly until the entire surface is coated with glaze. Clean off any that has dripped down the sides. With a brush, pat the glaze on the outside walls of the bowl or jar and turn the piece slowly until the entire surface is coated with glaze. Clean off any that has dripped down the sides. Turn the piece around as the glaze is applied, doing one coat over the entire piece before applying a second and third coat. The patting technique is better than stroking the piece with the brush. The glaze will fuse more evenly.

If a paint spray is available, glaze may be diluted and placed in the spray gun and applied evenly to the pottery. This method is especially good when the piece has been decorated with underglaze colors.

## KILNS

There are two types of kilns. In the direct-fire kiln, pronounced "kill," the fire comes in contact with the pottery. Marie Martinez and other primitive potters, as well as certain commercial potteries, use this type. The muffle kiln is like a kitchen-stove oven. There is a large firebox

with a smaller box inside. The fire goes between the boxes and the pottery is placed inside the smaller box. The muffle type is the most commonly used.

There are two kinds of muffle kilns. The wall-muffle kiln is less efficient. The heat travels up between the outer and inner walls. The tube-muffle kiln has tubes of fire clay lining the kiln all around the inside. The front tubes are set in place and sealed at every firing. The heat passes up through the tubes. There is greater radiation from the surface of the tubes than from the flat wall-type muffle. It requires less fuel and time to attain the desired temperature. The fuels used in heating muffle kilns are wood, gas, electricity, coal, or oil.

The following instructions for building an economical low-firing electric kiln were made by J. Sheldon Carey, ceramics teacher in the design department of the University of Kansas. Plate L gives the plans for the electric kiln.

#### AN ECONOMICAL LOW-FIRING ELECTRIC KILN

Any handy person can build this simple electric kiln, using only a few tools which can be found in the average home. It can be plugged into a 110-volt AC or DC line that is properly fused. Heavier than standard home fuses should be used, since the amount of current drawn is more than is used by the average home appliance.

An old stove with an insulated oven, picked up at a junkyard, will serve admirably as the outer framework. Lined with firebrick and equipped with heating coils, the kiln will produce pottery as beautiful as pieces fired in expensive factory-built equipment.

The back and front of the oven should be drilled or

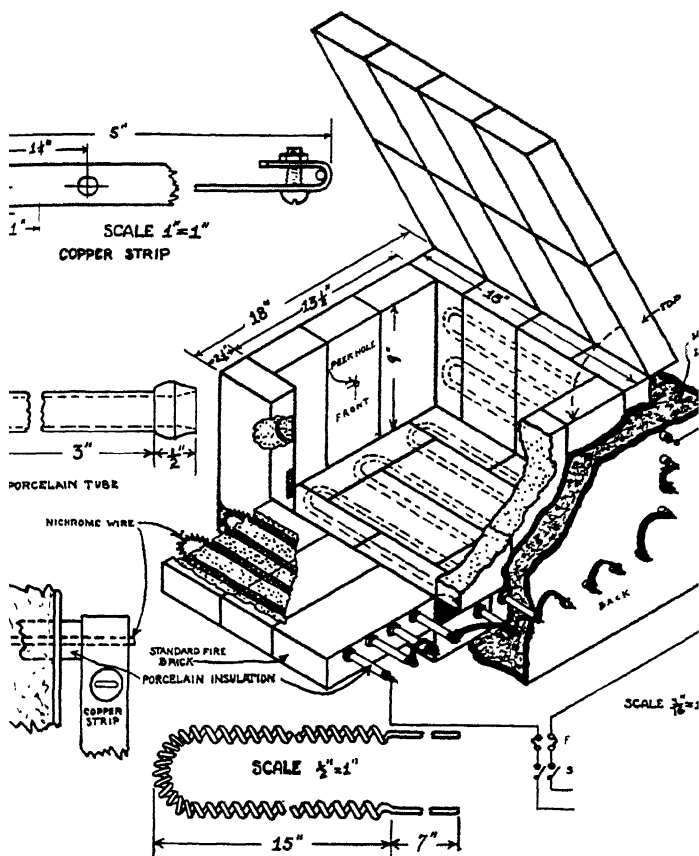


PLATE L. Plans for building an electric kiln.

punched as indicated in the scale drawing. The peephole is in the front and is kept covered during the firing. Porcelain tubes are inserted in each of the drilled holes at the back to prevent the wires from coming in contact with the metal sides of the oven.

The nichrome wire is wound around a  $\frac{1}{4}$ -inch dowel stick or rod so as to form a tight coil of uniform diameter throughout. To save time, this can be done on a lathe, drill press, or with a hand drill. Each coil is made of 154 inches of wire, leaving about 7 inches at both ends for making connections. The coils are made separately rather than in one continuous length so as to make replacements quick and inexpensive, should one of the seven sections of wire burn out.

The firebrick used is of the type made by burning out cork that has been mixed with clay, thus leaving a very porous and light material which is easily rasped or drilled. The bricks must be arranged in the kiln so as to fit tightly in place without cement. Determine which bricks require trimming, and rasp them with a wood rasp or coarse file. When trimming is completed and the bricks fit correctly, remove them and lay out the sides and bottom in panels, separating only one brick at a time to avoid a mistake in connection with drilling the  $\frac{3}{4}$ -inch holes into which the heating coils will be inserted. The drilling can be done easily by using a brace and electrician's bit or an electric drill. Try to keep the holes  $\frac{1}{4}$  inch below the surface, although no harm will be done should the bit break through the sides of the brick, exposing the coils, when they are in place. As the drilling of each panel is completed, insert the coils and put the whole panel in place in the oven. When all the bricks are in place, the ends of the coils are connected in series at the back of the kiln, using the  $\frac{1}{2}$ -inch copper jumpers and bolts. Be sure to connect one coil with the next, not to both ends of a single coil. The wire at each end is connected to the 30-

ampere switch which is mounted either on the kiln or on a nearby wall, fused for 30 amperes.

At 117 volts, the kiln will draw 23.7-ampere current, the resistance being approximately 4.5 ohms. This is equal to 2772.9 watts, costing about 50 cents for 6 hours' firing.

### *List of Materials for Electric Kiln*

#### I. Insulated Oven—from an old electric or gas stove

Inside dimensions—18" x 18" x 14" (any oven of similar dimensions will do.)

#### II. 30 Insulating Bricks

A. Size—standard 9" x 4½" x 2¼"

B. Heat resistance—2500° F.

C. Place purchased—Armstrong Cork Co.

D. Price—14.7 cents each

packed in lots of 25

Total cost of brick .....\$ 4.41

#### III. 80 feet Nichrome V Wire

A. Size—No. 10

B. Electrical resistance—.0648 ohms

C. Temperature resistance—2000° F.

D. Place purchased—Driver Harris Co.

E. Price—16¢ a foot

Total cost of wire ..... 12.80

#### IV. 14 Porcelain Wall Tubes

A. 3 inches or more long

B. Place purchased—any hardware store

C. Price—2¢ each

Total cost of tubes ..... .28

## V. Accessories

- A. 6 Copper strips—18 gauge  $\frac{1}{2}$ " wide x 72 long
- B. 14 Stove bolts— $\frac{1}{4}$ " x  $\frac{1}{2}$ " with nuts
- C. 5 feet No. 8 wire—Single conductor rubber cover in B.X. cable or conduct switch 30 amps

D. Total cost of accessories . . . . . 1.51

Grand Total \$19.00

## VI. Electricity

- A. 117 Volts—A.C. or D.C.
- B. 4.5 Ohms Resistance
- C. 23.7 Amps
- D. 2772.9 Watts
- E. 6 hours firing—Cone .06 or 1830° F.
- F. 16.6374 Kilowatt Hours
- G. at 3¢ a Kilowatt Hour
- H. 50¢ total cost of firing

The first firing of the green ware, also called raw ware, requires several precautions. Since the pieces are not glazed, they may be stacked together up to a point where they will not break or fit together too tightly when shrinking occurs. They chip easily in this dry state. Green ware and glazed ware should be fired separately whenever possible. The green ware may break and small particles stick to a glazed piece. Excess glaze may drip upon an unglazed piece.



Tripods for raising the glazed ware from the shelves come in a number of sizes. Fit a tripod on the bottom of each glazed piece and place it in position upon a shelf in the kiln. There should be only a thin coat of glaze on the bottom of the piece. It is not actually necessary to have glaze on the bottom. Care must be taken so that the pieces do not touch. They should fit solidly upon their tripods. There is a certain amount of movement of the pottery as the maximum temperature is reached. Sometimes one piece will fall over and ruin several others during the kiln firing. Powdered flint sprinkled over the shelves and bottom of the kiln prevents the drops of glaze from sticking.

To gauge the temperature of the firing, pyrometric cones are placed within view of a peephole in the door of the kiln. The cones should be chosen to represent the lower, medium, and high range of temperatures desired for that particular firing. They are set in wet grog clay at a slight angle pointing to the right. See Figure 17. The cones are arranged so that the highest-temperature cone is at the left, the medium is in the middle, and the low is at the right. An average firing would require cone .05—1900°; cone .06—1850°; and cone .07—1814°. These readings are Fahrenheit.

The length of time required for reaching these temperatures differs with the kiln, the fuel, the weather conditions, and the kiln load. After the kiln has reached a pink-hot color inside, it usually takes two or three hours to reach cone .07. When that temperature is reached, the clay in the cone vitrifies and it bends over. Usually the .06 cone is allowed to bend before turning off the kiln.

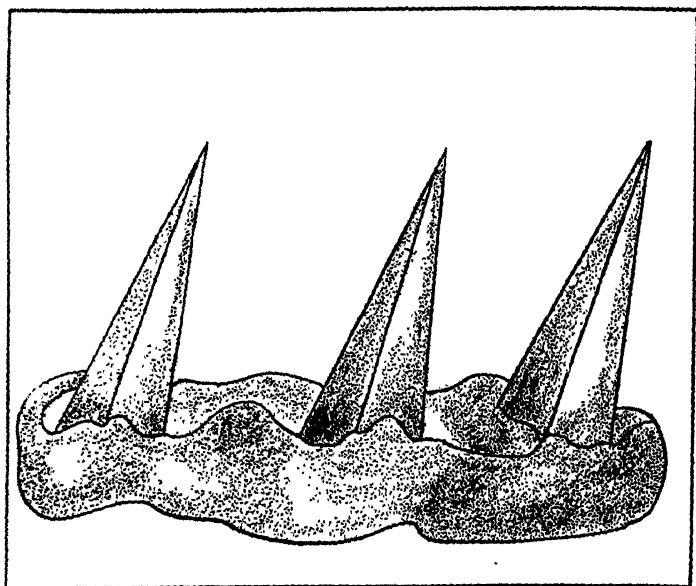


Figure 17. The cones are placed in grog clay at an angle.

The kiln should be allowed to cool from 24 to 48 hours before opening the door. It will still be warm inside and cotton work gloves should be worn for protection from the heat and from sharp pieces of glaze. The unloading of the kiln is a most exciting time in the ceramic artist's work. His art is truly proved by the fire.

Some glaze may have dripped at the bottom of a piece, or a tripod may have stuck to the base. The projecting parts should be carefully tapped off and the sharp edges ground smooth on an emery wheel. Some pieces will need reglazing, but it is difficult to reglaze a piece. Do not attempt to apply another color of glaze, since the chemical reactions may not be satisfactory.

## CHAPTER SIX: OTHERS

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### CORN, NUTS, AND SEEDS

When corn, nuts, and seeds are strung onto a strong cotton thread, beautiful bracelets and necklaces can be made. The necklace in Figure 18 was made of acorns with the cups. A large needle was pressed through the acorns and a double strand of heavy cotton thread was used for stringing them. They may be strung with or without the cups.

The necklace in Figure 19 was made of just the acorn cups. It resembles a Hawaiian lei. The cups can be used with other seeds and nuts for variety.

To dye squash, pumpkin, watermelon, and gourd seeds, place them in a hot commercial dye bath and let them absorb the color. Rinse the excess dye and string them in the desired pattern. See Figure 20 for a necklace of seeds.

In Figure 21, the necklace was completed by braiding cornhusks. Wool yarn and leather thongs may also be used for the ends of the necklace. If the materials are bulky, such a necklace is more comfortable to wear. Bracelets to match are made in the same manner.

Figure 22: A button of the same material used for the

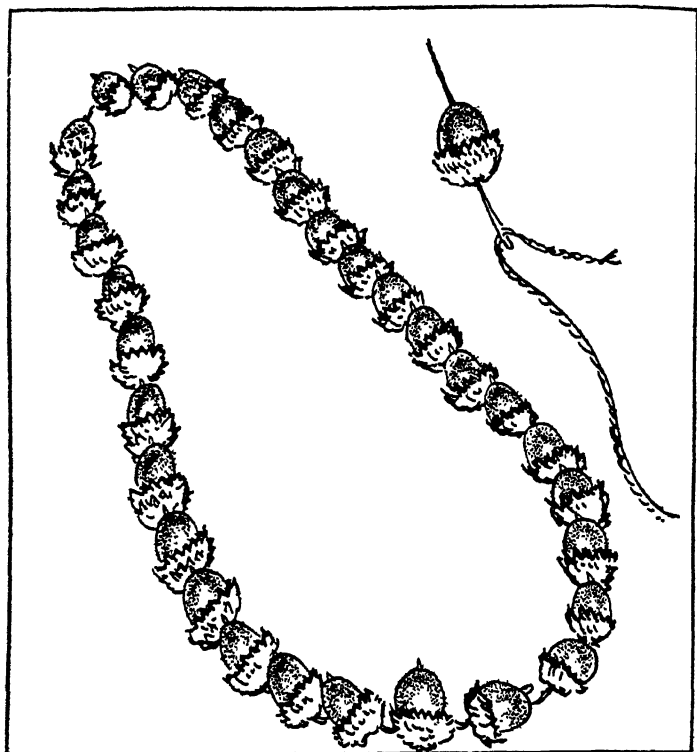


Figure 18. A necklace of acorns.

band and a loop of the braided material form the fastening for both the short necklaces and the bracelets.

### PINE CONES

Pine cones have long been used in floral arrangements for table decorations. A costume pin may be made of a sliced section of a cone. Select a cone that has fully opened. With a coping saw, cut through the center stalk



Figure 19. A necklace of acorn cups.

and slice the cone into as many sections as possible. The slices resemble opened blossoms. The bottom of the cone is like a small, full-petaled flower. By selecting small cones of uniform size, dress buttons can be made of the bottom section. A small screw eye is used for the back of the button. If the button is to receive much wear, it should be varnished or shellacked. The cones are beautiful in their natural coloring, so should not be painted.

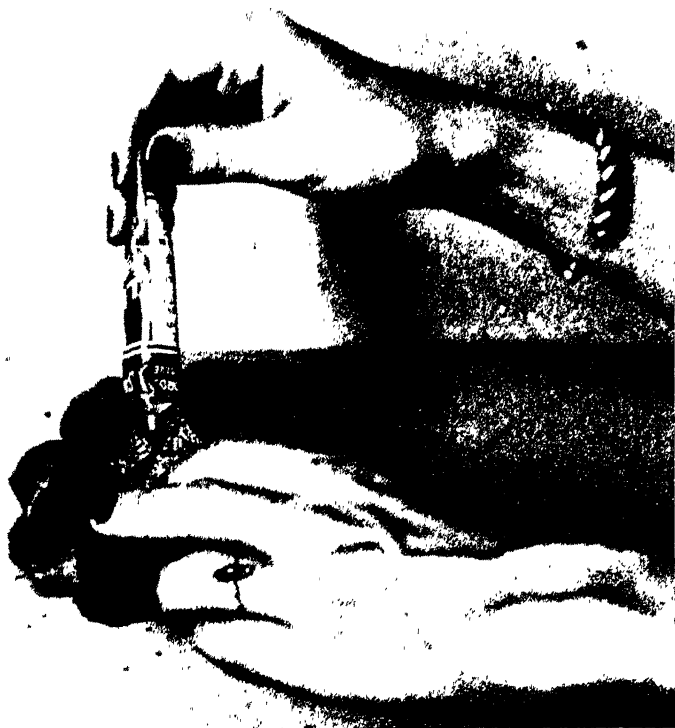


PLATE LI. Fill the back of the pine cone with sawdust and glue.

To cement a pin in place, Plate LI, the back of the pine-cone section should be filled level with plastic wood made by combining fine sawdust and a transparent cellulose glue. Allow this mixture to harden. A costume pin fastener is then glued in place. A common safety pin may be used if a strip of tape is sewed to the back of the pin to give the glue sufficient gripping surface. The smallest screw eyes or wire staples may be inserted in small cones left whole for a necklace.



Figure 20. A seed necklace.

### VEGETABLE DYES

The merits of aniline and vegetable dyeing have been tried. For fastness and greater variety of color the commercial dyes are more reliable. However, the beauty of a vegetable-dyed piece of cloth still holds a charm for the weaver and the embroiderer. The early pioneers of Kansas used onion skins, walnut hulls, bark, and other natural

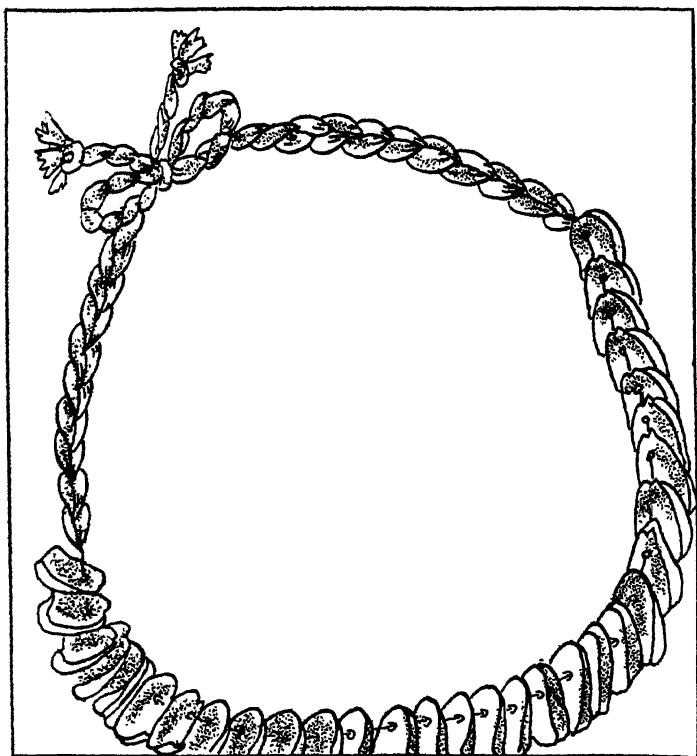


Figure 21. A braided cord for a necklace.

materials for dyestuffs. Easter eggs were wrapped in onion skins and placed in a hot salt or vinegar bath to make them red or yellow. Little boys suits were dyed a rich dark brown with walnut hulls. The stain of berries was used for dull blues and purples.

An interesting account of how walnut dye was made by a Southern Highland woman is quoted from Eaton's "Handicrafts of the Southern Highlands," page 143:





Figure 22. A bracelet with a button fastener.

Walnut Dye.—You want to get your roots and sprouts. Git 'em on the new moon in June. Skin 'em from the root up. Bile 'em about two or three hours. Bile just about one ooze. Put your wool in the ooze and bile it. If it haint dark enough, take out and bile more bark and put it in that. A grain of copperas'll make it darker. If you hang it out in the sun, hit'll turn dark.

She is also quoted as follows:

Git brown sage (sedge or slough grass), and bile it and put in a little alum. It makes the prettiest yaller that ever was.

Many plants, fruits, vegetables, and trees furnish dye material. A general rule to follow in experimenting with vegetable dyes is to soak the plants in water overnight. Then they should be boiled an hour or more to give the desired intensity. The dye should be strained to remove the plant matter, or the chopped dyestuff may be placed in a loosely woven cotton sack and lifted out when all of the coloring has been released from the plants, as when using tea balls.

A copper or enamel kettle should be used for dyeing. Smooth wooden sticks are used for stirring and lifting. Sufficient water to cover the cloth to be dyed should be placed in the kettle and brought to a boil. The concentrated dye is then added to the water. The cloth, which has been previously washed to remove starch and sizing, should be well covered by the dye bath.

To make the dye fast, it is usually necessary to treat the material before dyeing it. If the cloth is wool, cream of tartar is added to an alum bath,  $\frac{1}{4}$  ounce to each gallon of water. If the material is cotton, linen, or rayon,  $\frac{1}{4}$  ounce of ordinary washing soda is added. The alum bath is made by adding 1 ounce of powdered alum to a gallon of water. The cloth should be boiled slowly for an hour and then rinsed well before immersing it in the dye bath.

The plants which are to be used for dyeing must be gathered when they are young. The roots are collected in the autumn and the leaves just as they are becoming full grown. Berries and seeds should be gathered when they are ripe. Flowers yield their dye easily but should not be boiled too long.

The thick taproot of the dandelion is used by the Scotch for dyeing their Highland tartans. It gives a dull magenta color.

The common elderberry shrub gives two colors. The leaves when used with an alum mordant give a green color, and the purple berries, when used with an alum and salt mordant, make a blue-violet dye. The dye is violet when the alum mordant alone is used.

The golden rod yields a yellow dye. The plant and flower heads should be chopped into small pieces, put in water, and brought slowly up to a boil. The liquor should be allowed to simmer for several hours and then allowed to cool. The next day it should be heated again and the mordanted cloth added and allowed to simmer until the desired color is obtained.

The outer yellow and red skins of onions should be boiled for two hours and the previously mordanted cloth added and boiled for another hour. *This is not a very good dye.*

Pear leaves well bruised and brought to a boil release a dull yellow color.

The shells and husks of walnuts are both used for a brown dye. The dye formed by soaking the ripe walnut husks in water needs no mordant. If an alum mordant is used, the dye is made a yellow-brown. The husks may be boiled a half hour and allowed to cool. Then the material is added and it is boiled again until the desired shade is obtained.

The powdered leaves of sumac give a yellow-brown color, while the roots make a yellow dye. The berries make a purple shade.

Sunflower seeds and larkspur flowers are said to make a blue dye.

Beets make a red-violet dye.

Dyeing is an ancient art. It is another use of the materials at hand to make lovelier things for people to use.

### SAWDUST MODELING

Dry sawdust, when mixed with cooked flour paste, is

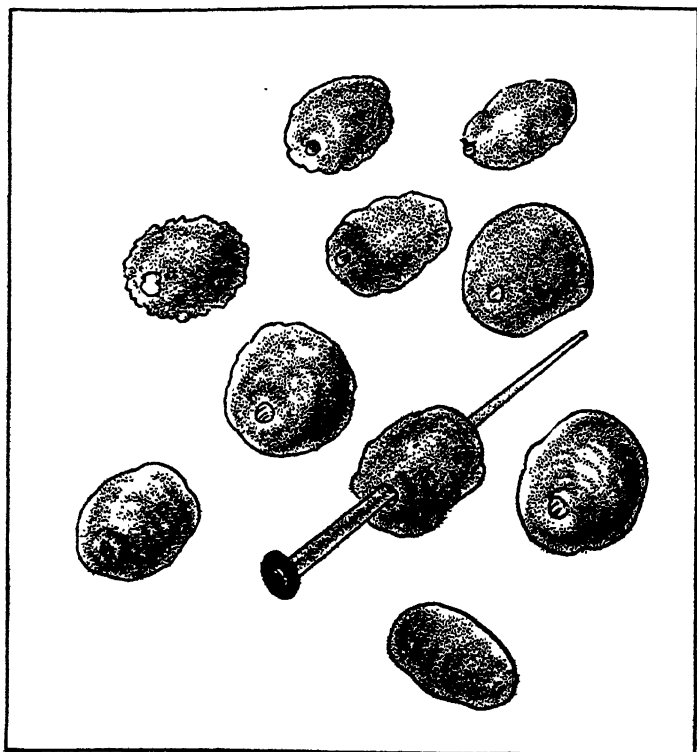


Figure 23. Form the beads over a nail or a toothpick.

an inexpensive modeling material. It is unlike clay modeling, since the sawdust does not stick together and is not pliable. It must be pressed lightly into shape. Avoid details. When dried and painted, the articles made are interesting in texture and form.

To one cupful of cooked flour paste, add one tablespoonful of prepared mucilage or glue. Mix in as much of the fine sawdust as the paste will take up.

Figure 23: Young children can make beads by pressing balls of the sawdust mixture over nails or toothpicks. The beads will crumble if they are not pressed together firmly. Little animals, candlesticks, and Christmas tree ornaments can be made. Buttons and costume jewelry make nice gifts at Christmastime. The little rabbit in Figure 24 shows how to model a simple form with few details. Marionettes of this material are durable and quickly made.

The modeled forms should be allowed to dry slowly. After they are completely dried, the roughness should be sanded off with fine sandpaper. Transparent water colors, show-card paints, or enamels may be used to decorate the articles. They may be shellacked or varnished to make them waterproof.

### PRINTED DESIGNS

The patterns of nature are lovely. Cross-sections of fruits, vegetables, and plants reveal intricate designs of rare beauty. Simple printed designs may be made on cloth or paper by dipping a cross-section into ink or paint and pressing it upon the surface of the material.

The design in Plate LII was made by a six-year-old

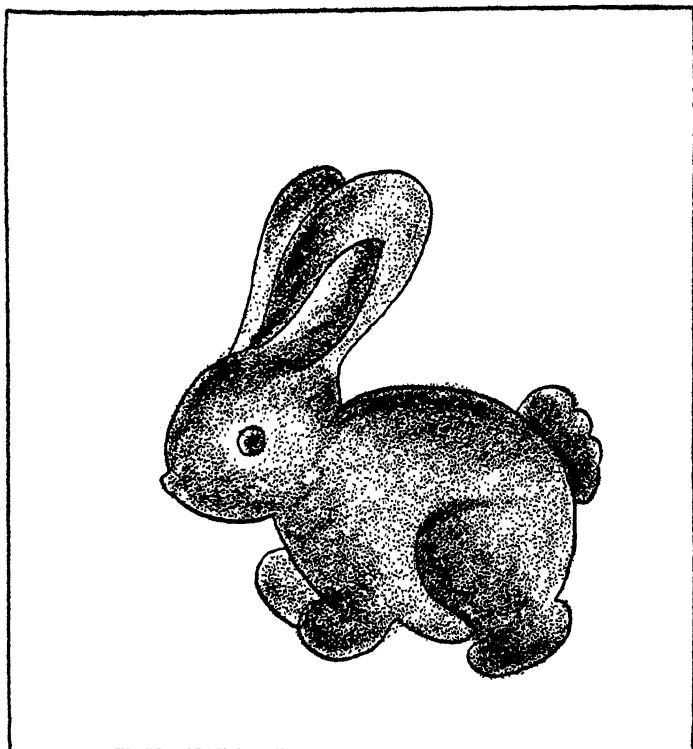


Figure 24. A rabbit modeled of sawdust.

child. She used a cut okra pod. When the pod is cut at an angle, a different-shaped design is made. The okra pods should be used before they have dried.

In Figure 25, a section of a corn cob was used. Apples also have an interesting flower form.

Potatoes are often cut and designs carved on the surface as with a linoleum block. Sweet potatoes are better than white potatoes for this purpose because they are

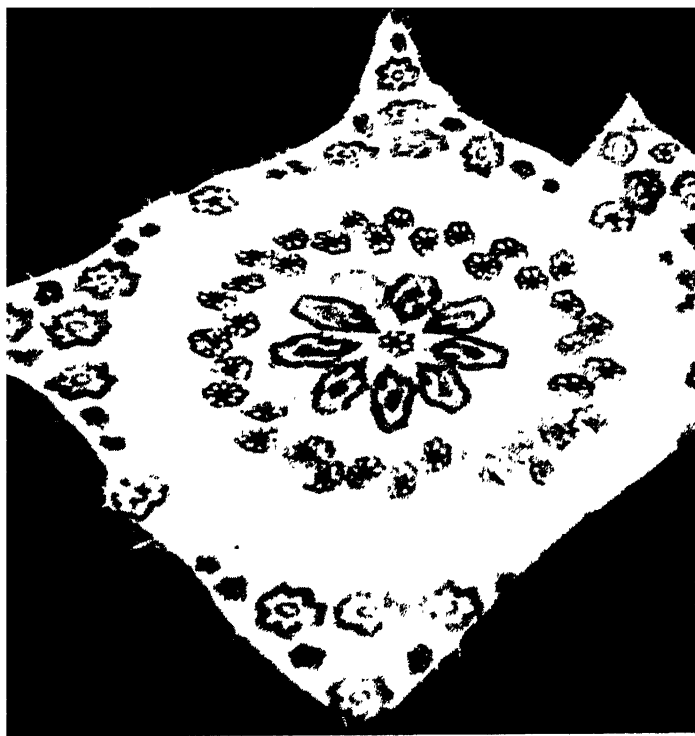


PLATE LII. A design printed from a cut okra pod.

not as moist and do not shrink as much. The details of a potato stamp are shown in Figure 26.

Figure 27 illustrates an ink pad made of a folded cloth, saturated with writing ink or show-card paint for printing on paper. Gift wrapping papers, book covers, stationery, menu folders, and party place cards can be decorated in this manner.

Ordinary house paint, enamels, printers ink, oil paint, or textile paint should be used on cloth. To make an ink

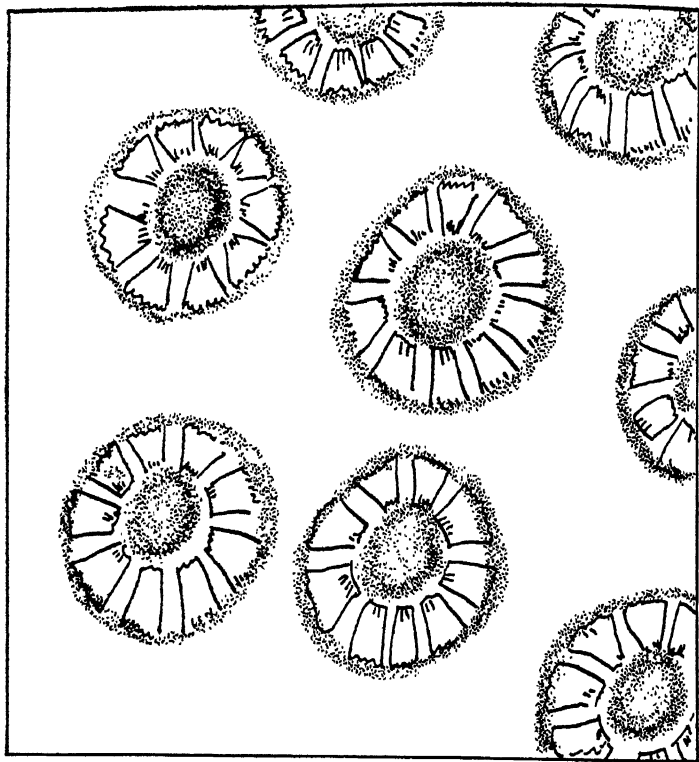


Figure 25. A design printed from a section of corn cob.

stamp pad as shown, place the paint between a fold of cloth and press the ink a little at a time through the top layer of the material. After the ink is dry, make the color fast by steaming it with a hot iron. (It is not necessary for enamel to be steamed.) Spread a newspaper on the ironing board. Place the design face down upon the paper. Lay a cloth dampened with water or white vinegar over the back of the material. With a hot iron, steam the



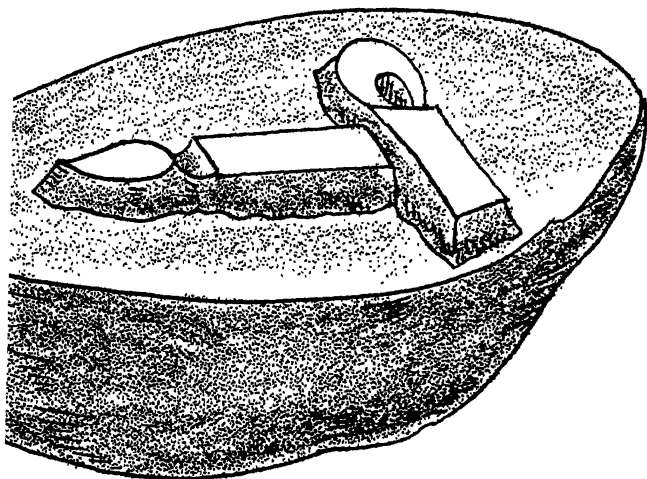


Figure 26. A stamp made of a potato.

design for one minute. Remove the cloth and iron the material until it is dry. Luncheon cloths, handkerchiefs, curtains, and head scarfs can be decorated in this way.

### FLOWER ARRANGEMENT

Expensive flowers are not necessary for interesting room and table decorations. The blossoms of wild plants are beautiful and offer a great variety of color and form.

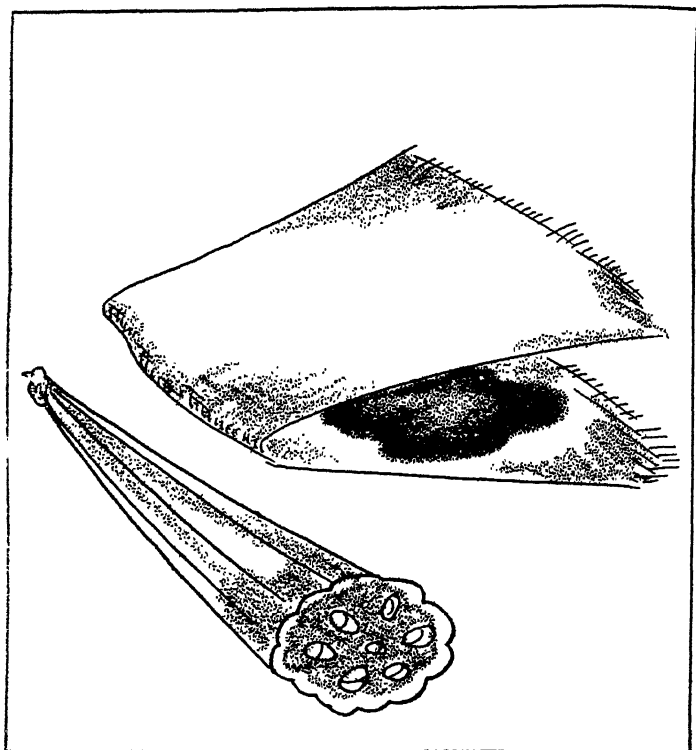


Figure 27. An ink pad.

Seed pods, branches of trees, hedge balls, thorns, leaves, fungus, rocks, and weeds, when arranged in a simple container, are most interesting. See Plate LIII.

A teacher and her pupils may make a collection of handmade pottery bowls and vases and small figures to be used in flower arrangements to decorate the classroom. Hand-woven mats of straw, grass, cornhusks, and cattail leaves make attractive backgrounds for such ar-



PLATE LIII. An arrangement in keeping with the Arkansas dolls and basket.

rangements. Vases and pottery figures in simple designs may be purchased in dime stores for this purpose. A commercial nondrying clay is valuable when making a display. The stems are held upright by placing them in the clay. A pottery or glass frog and a square of chicken wire are also used for holding the stems in place.

There are a few simple rules to follow in arranging flowers. First, use only a few flowers. Do not jam a great number of blossoms in a vase and call it an arrangement.

Select the flowers or plant forms for interesting and varying textures, size, shape, and color.

Second, choose a bowl or vase that suits the plants. If the blossoms are gay and brilliant, use a neutral-colored piece with an extremely simple form. If there is only a small amount of color, try to pick up that color in the bowl or in a small ceramic figure placed beside the vase. The size of the container should be large enough to create the impression that the flowers are secure, but not so heavy looking that it overbalances the flowers. The shape should be simple and fit the needs of the plant stems.

Third, balance should be taken into consideration. The flowers may be placed in the container so that the left and right half balance as to color and size or they may be arranged so that the color is greater on one side and the form is greater on the other. There is still balance, but two different qualities are used.

Fourth, there should be a center of interest as in a painting. The center of interest should be near the center of the composition and still not in the exact middle. It may be indicated by the form's largeness, brilliance in color, unusualness in form, or difference from the other items used.

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